



Estuary 7: Bridgeport

Watershed Summary

WATERSHED DESCRIPTION AND MAPS

The Bridgeport Estuary (Estuary 7) covers an area of approximately 10,870 acres in southwestern Connecticut. These impaired segments are located in the western portion of Long Island Sound (LIS). Most of the impaired segments in this summary are located in the municipality of Bridgeport, though four segments are located all or partially in either Fairfield or Stratford, CT.

The Bridgeport Estuary includes seven segments impaired for shellfish harvesting and one segment also impaired for recreation due to elevated bacteria levels. These segments were assessed by Connecticut Department of Energy and Environmental Protection (CT DEEP) and included in the CT 2010 303(d) list of impaired waterbodies. Some segments in the estuary are currently unassessed as of the writing of this document. This does not mean there are no potential issues on these segments, but indicates a lack of current data to evaluate the segments as part of the assessment process. An excerpt of the Integrated Water Quality Report is included in Table 1 (CT DEEP, 2010).

Impaired Segments

Segment 1: LIS WB Inner – Bridgeport Harbor (CT-W1_001-SB) is located in Bridgeport from Pleasure Beach to the saltwater limit in the Pequonnock River and Lewis Gut, and includes the Yellow Mill channel, Johnsons Creek, and Bridgeport Harbor. Segment 2: LIS WB Inner – Black Rock Harbor (CT-W1_002-SB) is located in Bridgeport from Fayerweather Island to the saltwater limit at the Interstate 95 crossing, and includes Burr Creek, Cedar Creek, and Black Rock Harbor (Figure 1).

These impaired segments of the Bridgeport Estuary have a water quality classification of SB. Designated uses include commercial shellfish harvesting, recreation, habitat for marine fish and other aquatic life and wildlife, industrial water supply, and navigation. Segment 1 (CT-W1_001-SB) of the estuary is impaired due to elevated bacteria

Impaired Segment Facts

Impaired Segments, Classifications, and Areas (square miles):

Segment 1: LIS WB Inner – Bridgeport Harbor (CT-W1_001-SB); SB; 1.43

Segment 2: LIS WB Inner – Black Rock Harbor (CT-W1_002-SB); SB;

Segment 3: LIS WB Shore – Outer Bridgeport Harbor (CT-W2_004); SA; 0.41

Segment 4: LIS WB Midshore – Lordship (CT-W3_001), SA; 7.92

Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002); SA; 8.08

Segment 6: LIS WB Midshore – Bridgeport Harbor (West) (CT-W3_003); SA; 6.06

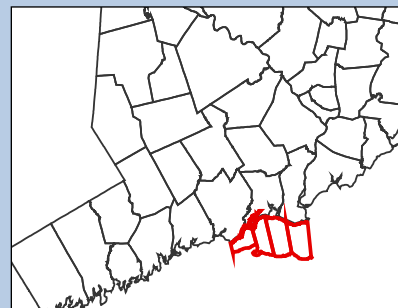
Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004); SA; 4.15

Municipalities: Bridgeport, Fairfield, Stratford

Designated Use Impairments: Shellfish, Recreation (W1_002-SB only)

MS4 Applicable? Yes

Applicable Season: Recreation Season (May 1 to September 30) and Year round for Shellfishing Uses



concentrations, affecting the designated use of shellfish harvesting. Segment 2 (CT-W1_002-SB) of the estuary is impaired due to elevated bacteria concentrations, affecting the designated use of shellfish harvesting and recreation. Segment 2 does not have a designated beach, so the specific recreation impairment is for non-designated swimming and other water contact related activities.

Segment 3: LIS WB Shore – Outer Bridgeport Harbor (CT-W2_004) extends from the shoreline to approximately 1,000 feet offshore. Segment 3 is located in Fairfield from Shoal Point to the tip of Fayerweather Island, and includes Penfield Beach, Jennings Beach, and Ash Creek outlet (Figure 1).

Segments 4 – 7 in LIS begin approximately 1,000 feet offshore, beyond Segment 3 (CT-W2_004). Segment 4: LIS WB Midshore – Lordship (CT-W3_001) is located in Stratford from Point No Point in Lordship out to the 50-foot contour in Stratford. Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002) is located in Bridgeport from inner Bridgeport Harbor out to the 50-foot contour line, and includes Lewis Gut and the Pleasure Beach area (Figure 1). Segment 6: LIS WB Midshore – Bridgeport Harbor (West) (CT-W3_003) is located in Bridgeport from outer Seaside Park area out to the 50-foot contour line, and includes Grover Hill, Fayerweather Island, and Seaside Beach area. Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) is located in Fairfield from outer Black Rock Harbor area to Shoal Point.

These impaired segments (Segments 3 – 7) of the Bridgeport Estuary have a water quality classification of SA. Designated uses include shellfish harvesting for direct human consumption, recreation, habitat for marine fish and other aquatic life and wildlife, industrial water supply, and navigation. These segments of the estuary are impaired due to elevated bacteria concentrations, affecting the designated use of shellfishing.

Table 1: Impaired segments in the Bridgeport Estuary from the Connecticut 2010 Integrated Water Quality Report

Waterbody ID	Waterbody Name	Location	Square Miles	Marine Aquatic Life	Recreation	Direct Shellfish	Commercial Shellfish	Fish Consumption
CT-W1_001-SB	LIS WB Inner - Bridgeport Harbor, Bridgeport	Western portion of LIS from SA/SB water quality line at mouth at Pleasure Beach area, US to saltwater limit in Pequonnock River and Lewis Gut (includes Yellow Mill Channel, Johnsons Creek, all SB water of Harbor area), Bridgeport.	1.434	NOT	NOT*	////	NOT	FULL

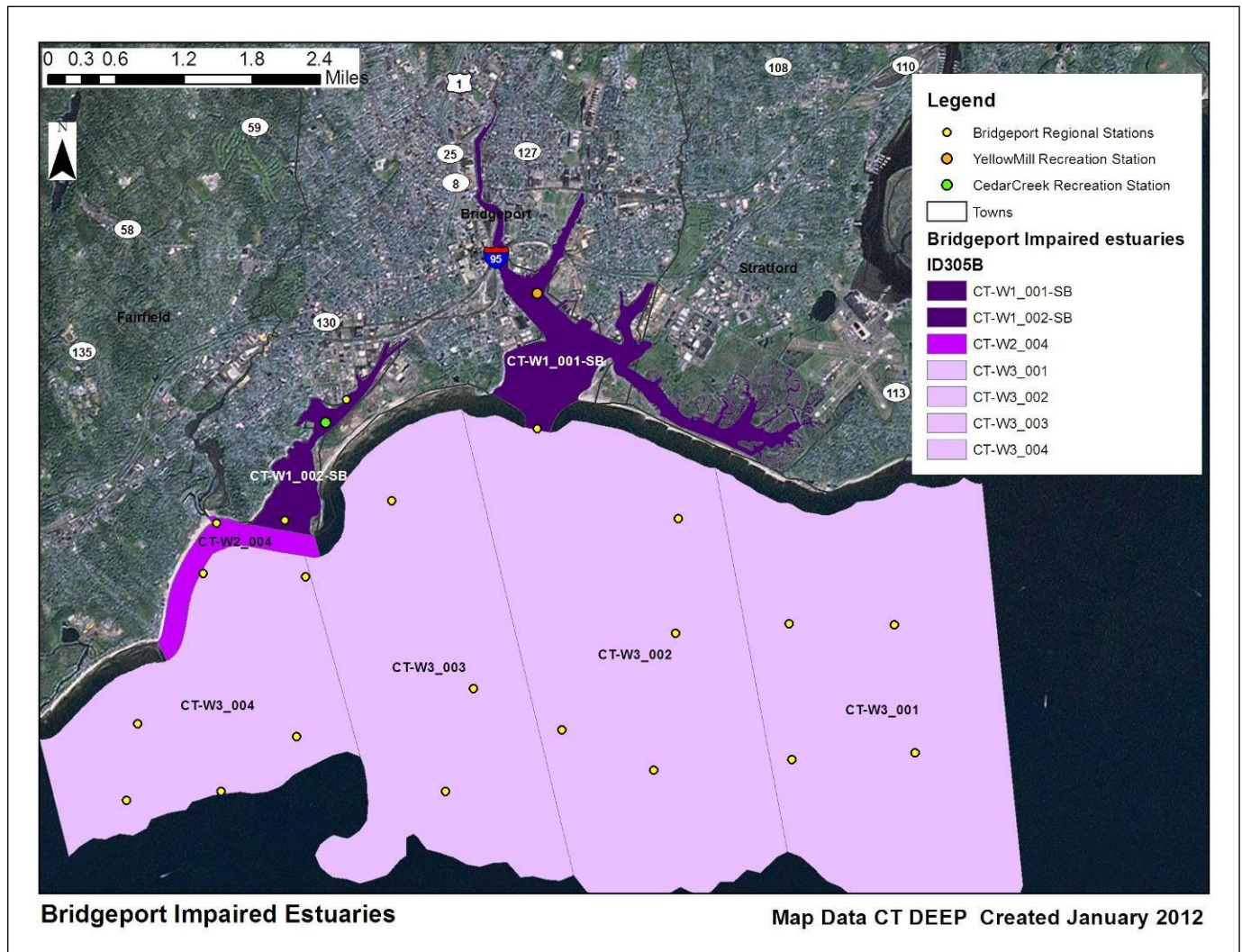
Table 1: Impaired segments in the Bridgeport Estuary from the Connecticut 2010 Integrated Water Quality Report (continued)

Waterbody ID	Waterbody Name	Location	Square Miles	Marine Aquatic Life	Recreation	Direct Shellfish	Commercial Shellfish	Fish Consumption
CT-W1_002-SB	LIS WB Inner - Black Rock Harbor, Bridgeport	Western portion of LIS, Inner Estuary, from SA/SB water quality line at mouth at Fayerweather Island area, US to saltwater limit at I95 (includes Burr Creek, Cedar Creek, all SB water of Harbor area), Bridgeport.	0.442	NOT	NOT	////	NOT	FULL
CT-W1_003-SB	LIS WB Inner - Ash Creek, Fairfield	Western portion of LIS, Inner Estuary, from SA/SB water quality line at mouth near South Benson Road, US to saltwater limit at I95, Fairfield/Bridgeport.	0.157	NOT	NOT*	////	NOT*	FULL
CT-W2_004	LIS WB Shore - Outer Bridgeport Harbor, Fairfield	Western portion of LIS from Shoal Point to tip of Fayerweather Island (includes Penfield Beach, Jennings Beach, Ash Creek outlet) out approximately 1000 ft offshore, Fairfield.	0.407	U	FULL	NOT	////	FULL
CT-W3_001	LIS WB Midshore - Lordship, Stratford	Western portion of LIS from approximately 1000 ft offshore (Point No Point, Lordship), out to 50 ft contour, Stratford. Odd shape due to 50 ft contour.	7.916	NOT	U	NOT	////	FULL
CT-W3_002	LIS WB Midshore - Bridgeport Hbr, East, Bridgeport	Western portion of LIS from approximately 1000 ft offshore (Inner Bridgeport Harbor, Lewis Gut, Pleasure Beach area), out to 50 ft contour, Bridgeport.	8.083	NOT	U	NOT	////	FULL

Table 1: Impaired segments in the Bridgeport Estuary from the Connecticut 2010 Integrated Water Quality Report (continued)

Waterbody ID	Waterbody Name	Location	Square Miles	Marine Aquatic Life	Recreation	Direct Shellfish	Commercial Shellfish	Fish Consumption
CT-W3_003	LIS WB Midshore - Bridgeport Hbr, West, Bridgeport	Western portion of LIS from approximately 1000 ft offshore (Grover Hill, Fayerweather Island, Seaside Beach area), out to 50 ft contour, Bridgeport. Odd shape due to 50 ft contour.	6.059	NOT	U	NOT	////	FULL
CT-W3_004	LIS WB Midshore - Shoal Point, Fairfield	Western portion of LIS from approximately 1000 ft offshore (Shoal Point and outer Black Rock Harbor area), out to 50 ft contour, Fairfield.	4.155	NOT	U	NOT	////	FULL
Shaded cells indicate impaired segment addressed in this TMDL Bold text indicates recreation impairment addressed in this TMDL *Bacteria data through 2011 shows attainment FULL = Designated Use Fully Supported NOT = Designated Use Not Supported U = Unassessed /// = Not Applicable to Segment								

Figure 1: GIS map featuring general information for the impaired segments in the Bridgeport Estuary



Shellfish Bed Classifications, Closures, and Lease Locations

The Connecticut Department of Agriculture/Bureau of Aquaculture (CT DA/BA) is responsible for regulating shellfish harvesting (<http://www.ct.gov/doag/cwp/view.asp?a=1369&Q=259170>). A shellfish growing area is defined by CT DA/BA as any area that supports or could support the growth and/or propagation of molluscan shellstock. Shellfish are defined by CT DA/BA as oysters, clams, mussels, and scallops, either shucked or in the shell, fresh or frozen, whole or in part. All shellfish growing areas are classified by CT DA/BA in accordance with the Interstate Shellfish Sanitation Conference (ISSC) National Shellfish Sanitation Program Model Ordinance (NSSP-MO) and CT General Statutes Chapter 491, §26-192e. These classifications, summarized below, are established to minimize health risks and may restrict the take and use of shellfish from some areas. They are based on fecal coliform bacteria standards as provided in the NSSP-MO (Interstate Shellfish Sanitation Conference, 2007). Any shellfish

area, regardless of classification, may be temporarily closed to all activities when a potential public health emergency exists as a result of a storm event, flooding, sewage, chemical, or petroleum discharges, or a hazardous algal bloom.

Shellfish harvesting has been divided into two designated uses as specified in the Connecticut WQS: shellfish harvesting suitable for direct human consumption (Class SA waters), and shellfish harvesting suitable for commercial operations requiring depuration or relay (Class SB waters). The impaired segments in the Bridgeport Estuary include both Class SA and SB waters.

Shellfish Bed Classifications and Closures in the Bridgeport Estuary

Shellfish classification areas in the Bridgeport Estuary are shown in Figure 2. The following classifications for shellfish growing areas are defined by CT DA/BA:

Approved Area: A growing area that is safe for the direct marketing or consumption of shellfish. An area may be classified as “Approved” when a sanitary survey finds that there is no contamination from human or animal fecal matter at levels that present an actual or potential public health hazard, and is not contaminated by pathogenic organisms, poisonous or deleterious substances, or marine biotoxins, and has water quality that meets the bacteriological standards for an Approved growing area.

Conditionally Approved Area: A growing area that, when open, shellfish may be harvested recreationally for consumption, or commercially for market. An area may be classified as “Conditionally Approved” when a sanitary survey finds that these areas can remain open for a reasonable period of time, and that factors impacting the area are known and predictable and do not preclude a reasonable management approach. Bacteriological water quality must correlate with the factors impacting the growing area. Each Conditionally Approved growing area must have a written management plan that is adhered to by all responsible parties.

Restricted-Relay/Depuration: A growing area in which the sanitary survey finds there are levels of fecal pollution, human pathogens, or poisonous or deleterious substances that can be reduced by relaying the shellstock to Approved or Conditionally Approved waters for natural cleansing or depuration. Shellfish from these areas may not be directly harvested for market or consumption.

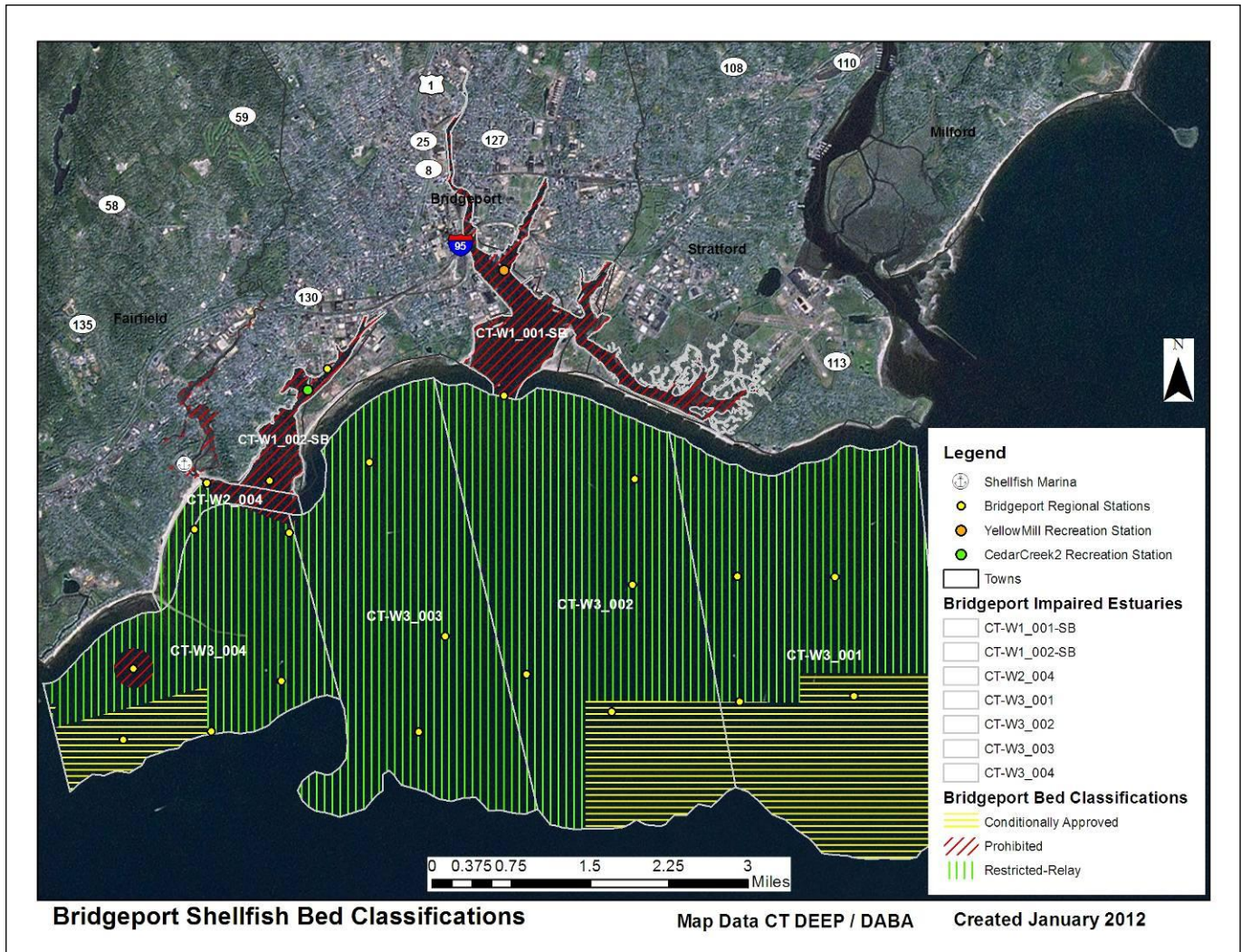
Conditionally Restricted: A growing area that the sanitary survey finds meets “Restricted” classification when the area is in the open status, and meets the “Prohibited” classification when the area is in the closed status. The management plan must designate whether harvested shellfish are relayed or depurated.

Prohibited: A growing area where there has not been a sanitary survey conducted within the last 12 years must be classified as Prohibited. Any area with a sewage treatment plant outfall or other point source that could impact public health is classified as Prohibited. This classification prohibits the harvest of shellfish except for seed oystering or depletion of the area.

As discussed above and shown in Table 1, Segment 2 (CT-W1_002-SB) did not meet its designated use for recreation and shellfishing due to bacteria. Segment 2 is Prohibited from shellfish harvesting (Figure 2). Segments 1 and 3 – 7 did not meet their designated use for shellfish harvesting for direct human consumption due to bacteria (Table 1). Segment 1 (CT-W1_001-SB) is Prohibited from shellfish harvesting. Segment 3 (CT-W2_004) is Prohibited near Black Rock Harbor, and the central part of the

impaired segment is permitted by Restricted-Relay/Depuration. Shellfishing is permitted by Restricted-Relay/Depuration near the shore, and Conditionally Approved in the outer waters of Segments 4 (CT-W3_001) and 5 (CT-W3_002). Segment 6 (CT-W3_003) is permitted by Restricted-Relay/Depuration. Segment 7 (CT-W3_004) is permitted by Restricted-Relay/Depuration near the shore, Conditionally Approved in the outer waters, and Prohibited around a dredge material disposal site (Figure 2).

Figure 2: GIS map featuring shellfish bed classifications and closures for the impaired segments in the Bridgeport Estuary



Shellfish Bed Lease Locations

Shellfish beds in the Bridgeport Estuary are also classified by their management (Figure 3). CT DA/BA defines these areas as follows:

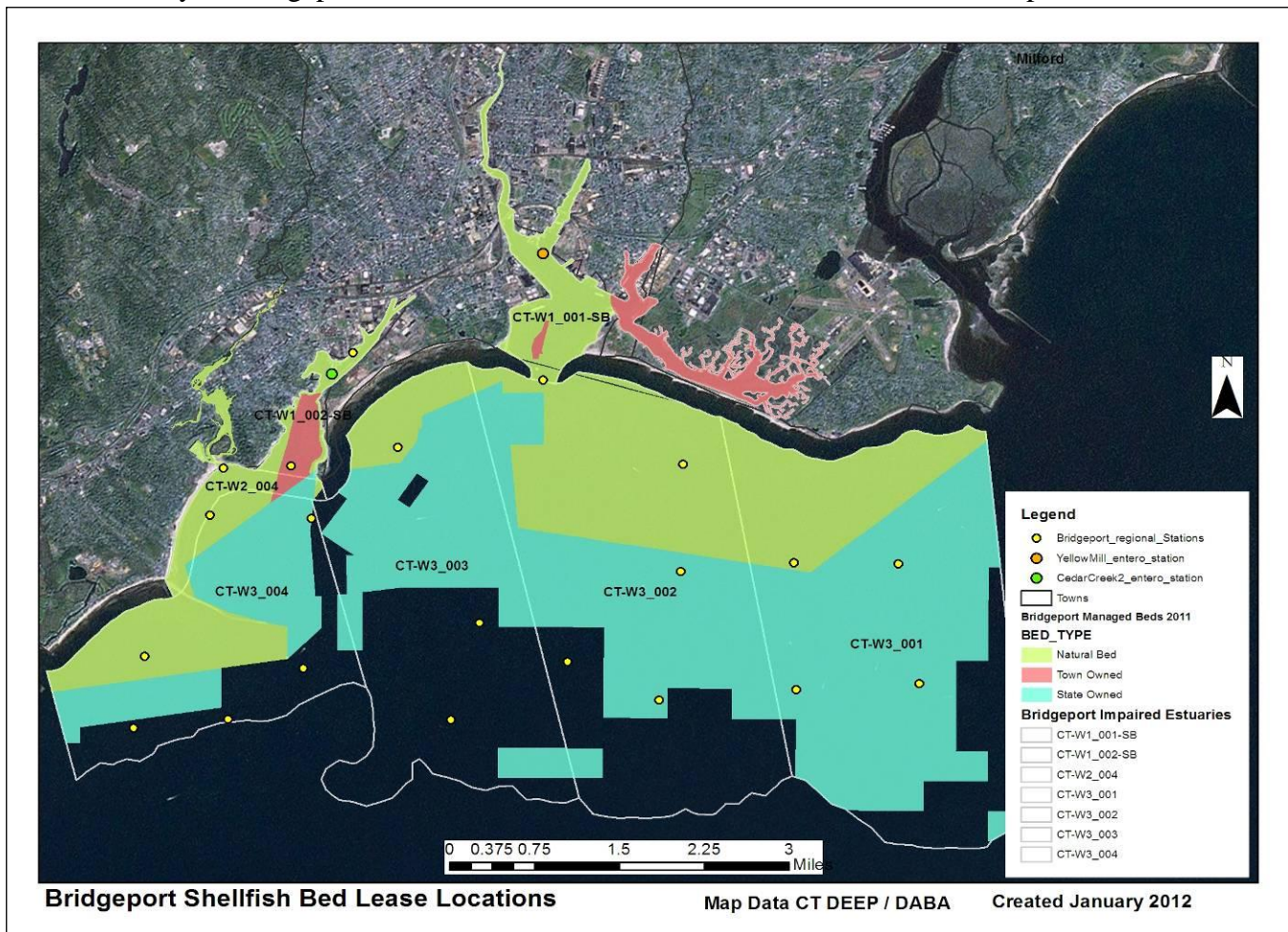
State and Town Beds: In 1881, a line, referred to as the Commissioner's Line, was established to divide the waters of the State into northern and southern sections. All beds south of this line are State beds and most beds north of this line are town beds. Town beds are leased, owned or managed through the local shellfish commission. However, CT DA/BA still controls all the licensing and regulations for both state and town beds. For example, DA/BA issues licenses and

determines when an area will be closed to shellfishing due to a change in water quality. Towns may require additional permits to work in waters under local jurisdiction. Beds north of the line in Westport, Milford, West Haven, and New Haven are exceptions to this as they are fully under State control.

State and Town Natural Beds: Natural beds get their name from the fact that shellfish, especially oyster, naturally inhabited the area. These areas tend to be closer to shore, usually at the mouth of a river. Natural beds have specific regulations concerning their use, including licensing and harvesting methods. They are predominately seed beds that cannot be mechanically harvested. Use of natural beds requires a Relay/Transplant License I or II and/or Seed Oyster Harvesting License from CT DA/BA. Any person assisting in the harvesting of seed oysters must have a Helper's License. These beds cannot be leased or subdivided; they are to remain open to any properly licensed harvester. State natural beds are natural beds south of the Commissioner's Line. Descriptions of these beds can be found in §3295 of the Connecticut General Statutes (CGS), revision of 1918. Not all beds listed in §3295 were mapped, and many natural beds in State waters off Greenwich are managed through leases. Town natural beds were defined by law under §2326 of the CGS of 1888. Each town had the opportunity to map areas to be considered natural beds. The documents, written descriptions, and maps were submitted to the Superior Court with jurisdiction for that town. Several towns did not avail themselves to this opportunity, and some, such as Westport, have changed the delineation of their natural beds in recent court decisions. There are also areas that may have been declared natural beds, but are now leased.

All shellfish beds in the Bridgeport Estuary are at least partially managed as natural beds. Portions of the beds in Segments 1 (CT-W1_001-SB), 2 (CT-W1_002-SB), 3 (CT-W2_004), and 7 (CT-W3_004) are town-managed beds. Portions of the beds in Segments 3, 4 (CT-W3_001), 5 (CT-W3_002), 6 (CT-W3_003), and 7 are State-managed beds (Figure 3).

Figure 3: GIS map featuring Shellfish Bed Lease Locations for the impaired segments in the Bridgeport Estuary



WHY IS A TMDL NEEDED?

For saltwater segments, the indicator bacteria, fecal coliform, is used in the CT Water Quality Standards (WQS) to assess shellfish uses for Class SA and SB waters (CTDEEP, 2011). Enterococcus is the indicator bacteria used to assess recreational uses for Class SA and SB waters. All data are from CT DEEP, USGS, Bureau of Aquaculture, or volunteer monitoring efforts at stations located on the impaired segments.

Segments 1 (CT-W1_001-SB) and 2 (CT-W1_002-SB) are Class SB saltwater waterbodies. Their applicable designated uses include commercial shellfish harvesting, recreation, habitat for marine fish and other aquatic life and wildlife, industrial water supply, and navigation. Water quality analyses were conducted using data from one sampling location on Segment 1 and two sampling locations on Segment 2 (Table 2). The water quality criteria for fecal coliform (shellfish) for Segment 1, along with bacteria sampling results from 2000 – 2010, are presented in Table 14. The water quality criteria for fecal coliform (shellfish) and enterococci (recreation) for Segment 2, along with bacteria sampling results from 2000 – 2010, are presented in Table 15. These segments of the estuary are impaired due to elevated bacteria concentrations, affecting the designated use of shellfishing for Segment 1 and shellfishing and recreation for Segment 2. To aid in identifying possible bacteria sources, the geometric mean was also calculated for wet-weather and dry-weather sampling days for all stations on Segments 1 - 7, where possible (Tables 14 – 20).

Segment 1 (CT-W1_001-SB): As shown in Table 14, the 90% of samples less than values exceeded the WQS for fecal coliform once at Station 015-03.3 in 2010 during the sampling period. Geometric mean values did not exceed the WQS for fecal coliform on any sampling date. Geometric means for data collected during the sampling period were also calculated for each station using wet and dry-weather conditions, resulting in no exceedance of the WQS for fecal coliform.

Segment 2 (CT-W1_002-SB): As shown in Table 15, single sample values exceeded the recreation WQS for enterococci multiple times in 2009 during the sampling period. Geometric mean values did not exceed the WQS for enterococci on any sampling date. Geometric means for data collected during the sampling period were also calculated for each station using wet and dry-weather conditions, resulting in exceedance of WQS for enterococci during wet and dry-weather at Station Cedar Creek 2. the 90% of samples less than values exceeded the shellfish WQS for fecal coliform twice at Station 015-02.2 in 2009 and 2010 during the sampling period. Geometric mean values did not exceed the WQS for fecal coliform on any sampling date. Geometric means for data collected during the sampling period were also calculated for each station using wet and dry-weather conditions, resulting in no exceedance of the WQS for fecal coliform.

Segments 3 - 7 are Class SA saltwater waterbodies. Their applicable designated uses include shellfish harvesting for direct human consumption, recreation, habitat for marine fish and other aquatic life and wildlife, industrial water supply, and navigation. Water quality analyses were conducted using data from one sampling location on Segment 3 (CT-W2_004), four sampling locations on Segments 4 (CT-W3_001) and 5 (CT-W3_002), three sampling locations on Segment 6 (CT-W3_003), and six sampling locations on Segment 7 (CT-W3_004). The water quality criteria for fecal coliform, along with bacteria sampling results from 2000 – 2011, are presented in Tables 16 – 20. These segments of the estuary are impaired due to elevated bacteria concentrations, affecting the designated use of shellfishing.

Segment 3 (CT-W2_004): As shown in Table 16, geometric mean and the 90% of samples less than values exceeded the WQS for fecal coliform for all sampling years at Station 051-06.2 in Segment 3 during the sampling period. Geometric means for data collected during the sampling period were also calculated for each station using wet and dry-weather conditions, resulting in exceedance of WQS for fecal coliform during wet and dry-weather at Station 051-06.2.

Segment 4 (CT-W3_001): As shown in Table 17, the 90% of samples less than values exceeded the WQS for fecal coliform multiple times at Stations 138-02.0 and 138-02.1 in Segment 4 during the sampling period. Stations 138-03.0 and 138-04.0 had insufficient data for the 90% of samples less than and geometric mean calculations. Geometric mean values exceeded the WQS for fecal coliform once at Station 138-02.1 in 2001. Geometric means for data collected during the sampling period were also calculated for each station using wet and dry-weather conditions. Although there were geomean exceedances in individual years, geometric means for wet and dry-weather did not exceed the WQS for fecal coliform at any station.

Segment 5 (CT-W3_002): As shown in Table 18, the 90% of samples less than values exceeded the WQS for fecal coliform multiple times at all stations in Segment 5 during the sampling period. Geometric mean values exceeded the WQS for fecal coliform multiple times at Station 138-01.2 and once at Station 138-01.1 in 2004. Geometric means for data collected during the sampling period were also calculated for each station using wet and dry-weather conditions. Although there were geomean exceedances in individual years, geometric means for wet and dry-weather did not exceed the WQS for fecal coliform at any station.

Segment 6 (CT-W3_003): As shown in Table 19, the 90% of samples less than values exceeded the WQS for fecal coliform multiple times at all stations in Segment 6 during the sampling period. Geometric mean values exceeded the WQS for fecal coliform multiple times at Station 015-02.4. Geometric means for data collected during the sampling period were also calculated for each station using wet and dry-weather conditions. Although there were geomean exceedances in individual years, geometric means for wet and dry-weather did not exceed the WQS for fecal coliform at any station.

Segment 7 (CT-W3_004): As shown in Table 20, the 90% of samples less than values exceeded the WQS for fecal coliform multiple times at all stations in Segment 7 during the sampling period. Geometric mean values exceeded the WQS for fecal coliform multiple times at Stations 015-02.1 and 051-06.1 and once at Station 051-05.0 in 2000. Geometric means for data collected during the sampling period were also calculated for each station using wet and dry-weather conditions, resulting in exceedance of WQS for fecal coliform during wet-weather at Station 015-02.1.

Due to the elevated bacteria measurements presented in Tables 14 – 20, these seven impaired segments did not meet CT's bacteria WQS, were identified as impaired, and were placed on the CT List of Waterbodies Not Meeting Water Quality Standards, also known as the CT 303(d) Impaired Waters List. The Clean Water Act requires that all 303(d) listed waters undergo a TMDL assessment that describes the impairments and identifies the measures needed to restore water quality. The goal is for all waterbodies to comply with State WQS.

Table 2: Sampling station location description for the impaired segments in the Bridgeport Estuary

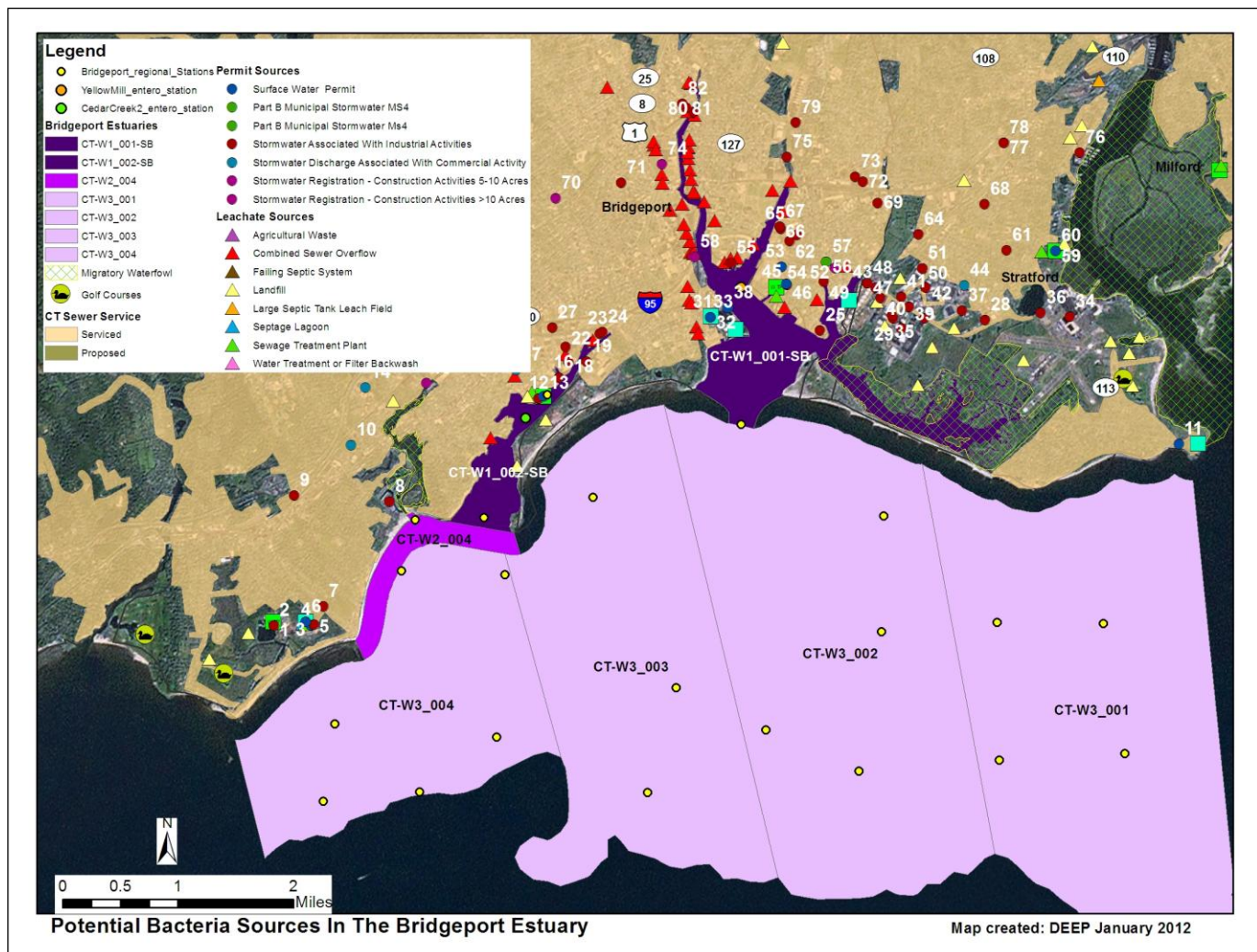
Waterbody ID	Station	Station Description	Town	Latitude	Longitude
CT-W1_001-SB	015-03.3	breakwaters Bridgeport Harbor	Bridgeport	41.1553	-73.1790
CT-W1_002-SB	015-02.2	N"8" Black Rock Harbor entrance	Bridgeport	41.1434	-73.2217
CT-W1_002-SB	Cedar Creek 2	Cedar Creek	Bridgeport	41.0938	-73.1287
CT-W2_004	051-06.2	mouth Ash Creek	Fairfield	41.1430	-73.2331
CT-W3_001	138-02.0	R"18"	Stratford	41.1131	-73.1358

Waterbody ID	Station	Station Description	Town	Latitude	Longitude
CT-W3_001	138-02.1	W. N"20"	Stratford	41.1305	-73.1363
CT-W3_001	138-03.0	E. N"20"	Stratford	41.1304	-73.1186
CT-W3_001	138-04.0	E. R"18"	Stratford	41.1140	-73.1150
CT-W3_002	138-01.0	W. R"18"	Stratford	41.1117	-73.1591
CT-W3_002	138-01.1	S. Long Beach	Stratford	41.1292	-73.1555
CT-W3_002	138-01.2	S. Long Beach	Stratford	41.1439	-73.1552
CT-W3_002	015-05.0	SE station 3.1	Bridgeport	41.1168	-73.1746
CT-W3_003	015-02.4	S. Seaside Park near bathhouses	Bridgeport	41.1460	-73.2036
CT-W3_003	015-03.0	S. channel to Bridgeport Harbor	Bridgeport	41.1088	-73.1943
CT-W3_003	015-03.1	R"2"/C"3" channel	Bridgeport	41.1220	-73.1896
CT-W3_004	051-05.0	E. R"22" bell	Fairfield	41.1075	-73.2481
CT-W3_004	051-06.0	WPCF outfall pipe end	Fairfield	41.1173	-73.2463
CT-W3_004	051-06.1	Jennings Beach	Fairfield	41.1366	-73.2353
CT-W3_004	015-01.0	SW Penfield Reef	Bridgeport	41.1087	-73.2321
CT-W3_004	015-01.1	Penfield Reef	Bridgeport	41.1157	-73.2194
CT-W3_004	015-02.1	Black Rock Harbor mouth "2A"	Bridgeport	41.1362	-73.2181

POTENTIAL BACTERIA SOURCES

Potential sources of indicator bacteria in a watershed include point and non-point sources, such as stormwater runoff, agriculture, sanitary sewer overflows (collection system failures), illicit discharges, and inappropriate discharges to the waterbody. Potential sources that have been tentatively identified in the Bridgeport Estuary are presented in Table 3 and Figure 4. However, the list of potential sources is general in nature and should not be considered comprehensive. There may be other sources not listed here that contribute to the observed water quality impairment in the study segments. Further monitoring and investigation will confirm listed sources and discover additional ones. Some segments in this watershed are currently listed as unassessed by CT DEEP procedures. This does not mean that there are no data or impairments in existence in the segment. There are data from permitted sources for some segments, and CT DEEP recommends that any elevated concentrations found from those permitted sources be addressed through voluntary reduction measures. More detailed evaluation of potential sources is expected to become available as activities are conducted to implement these TMDLs.

Figure 4: Potential bacteria sources to the impaired segments in the Bridgeport Estuary



The potential sources map for the impaired basin was developed after thorough analysis of available data sets. If information is not displayed in the map, then no sources were discovered during the analysis. The following is the list of potential sources that were evaluated: problems with migratory waterfowl, golf course locations, reservoirs, proposed and existing sewer service, cattle farms, poultry farms, permitted sources of bacteria loading (surface water discharge, MS4 permit, industrial stormwater, commercial stormwater, groundwater permits, and construction related stormwater), and leachate and discharge sources (agricultural waste, CSOs, failing septic systems, landfills, large septic tank leach fields, septage lagoons, sewage treatment plants, and water treatment or filter backwash).

Table 3: Potential bacteria sources to the impaired segments in the Bridgeport Estuary

Segment #	Impaired Segment	Permit Source	Illicit Discharge	CSO/SSO Issue	Failing Septic System	Marinas	Stormwater Runoff	Nuisance Wildlife/Pets	Other
1	LIS WB Inner – Bridgeport Harbor CT-W1_001-SB	x	x	x	x	x	x	x	x
2	LIS WB Inner – Black Rock Harbor CT-W1_002-SB	x	x	x	x	x	x	x	x
3	LIS WB Shore – Outer Bridgeport Harbor CT-W2_004	x	x	x	x	x	x	x	x
4	LIS WB Midshore – Lordship CT-W3_001	x	x	x	x	x	x	x	x
5	LIS WB Midshore – Bridgeport Harbor (East) CT-W3_002	x	x	x	x	x	x	x	x
6	LIS WB Midshore – Bridgeport Harbor (West) CT-W3_003	x	x	x	x	x	x	x	x
7	LIS WB Midshore – Shoal Point CT-W3_004	x	x	x	x	x	x	x	x

Point Sources

Permitted sources within the watershed that could potentially contribute to the bacteria loading are identified in Table 4. This table includes permit types that may or may not be present in the impaired watershed. A list of active permits in municipalities that drain to the Bridgeport estuary is included in Table 5. Additional investigation and monitoring could reveal the presence of other discharges in the estuary.

Table 4: General categories list of permitted discharges

Permit Code	Permit Description Type	Number in Estuary
CT	Surface Water Discharges	9
GPL	Discharge of Swimming Pool Wastewater	0
GSC	Stormwater Discharge Associated with Commercial Activity	4
GSI	Stormwater Associated with Industrial Activity	61
GSM	Part B Municipal Stormwater MS4	3
GSN	Stormwater Registration – Construction	6
LF	Groundwater Permit (Landfill)	0
UI	Underground Injection	0

Permitted Sources

As shown in Table 5, there are multiple permitted discharges in Bridgeport, Fairfield, and Stratford that may be contributing bacteria to the impaired segments. These facilities include the PSEG Power CT, Bridgeport Energy, Derecktor Shipyards, Bridgeport East and West WPCFs, East Bridgeport Rail Yard, Fairfield WPCF, Stratford WPCF, Stratford Maintenance Facility, and multiple marinas throughout the watershed. According to the 2005 Bridgeport Estuary Report, there are approximately 12 marinas in the Bridgeport Estuary. These include Captain's Cove Marina, East End Yacht Club, Hitchcock Marina, Cedar Marina, Pequonnock Yacht Club, and Black Rock Yacht Club. As shown in Table 6, there are water quality data available for some of these discharges. Although this data cannot be compared to the WQS as there is no single sample shellfish standard for fecal coliform, several samples were high. Of particular note, the following industrial discharges had sampling results range from 10,000 to 70,000 colonies/100 mL: Bridgeport United Recycling (GSI000515), Wheelabrator Bridgeport (GSI000614), Laidlaw Transit (GSI001279), Inland Fuel Terminals (GSI001400), Wisvest CT (GSI001434), Flow Polymers (GSI000773), Sikorsky Airport (GSI000833), Hampford Research (GSI000943), and Emsar (GSI001222) (Table 6).

Since the MS4 permits are not targeted to a specific location, but the geographic area of the regulated municipality, there is no one accurate location on the map to display the location of these permits. One dot will be displayed at the geographic center of the municipality as a reference point. Sometimes this location falls outside of the targeted watershed and therefore the MS4 permit will not be displayed in the Potential Sources Map. Using the municipal border as a guideline will show which areas of an affected watershed are covered by an MS4 permit.

Table 5: Permitted facilities that may be affecting the Bridgeport Estuary

Town	Client	Permit ID	Permit Type	Site Name	Address	Map #
Bridgeport	PSEG Power Connecticut, Llc	CT0003778	Surface Water Permit	PSEG Power Connecticut, Llc	10 Henry Street	38
Bridgeport	Bridgeport Energy, Llc	CT0030180	Surface Water Permit	Bridgeport Energy, Llc	10 Atlantic Street	33
Bridgeport	Derecktor Shipyards Conn, Llc	CT0030501	Surface Water Permit	Derecktor Shipyards	837 Seaview Avenue	54
Bridgeport	City Of Bridgeport	CT0100056	Surface Water Permit	Bridgeport West WPCF	205 Bostwick Avenue	13
Bridgeport	City Of Bridgeport	CT0101010	Surface Water Permit	Bridgeport Eastside WPCF	695 Seaview Avenue	46
Bridgeport	Stop & Shop Supermarket Company Llc	GSC000344	Stormwater Discharge Associated With Commercial Activity	Stop & Shop	2135-2145 Fairfield Avenue	17
Bridgeport	Harborview Terminals, Inc.	GSI000343	Stormwater Associated With Industrial Activities	Harborview Terminals, Inc.	1 Seaview Avenue	25
Bridgeport	Bridgeport United Recycling, Inc.	GSI000514	Stormwater Associated With Industrial Activities	Bridgeport United Recycling, Inc.	50 Cross Street	72
Bridgeport	General Electric Co.	GSI000534	Stormwater Associated With Industrial Activities	General Electric Co.	1285 Boston Avenue	79
Bridgeport	Tilcon Connecticut Inc.	GSI000566	Stormwater Associated With Industrial Activities	Marine Dock (Inactive)	1469 South Avenue	68
Bridgeport	O & G Industries, Inc.	GSI000594	Stormwater Associated With Industrial Activities	O & G Industries, Inc.	240-260 Bostwick Avenue	16
Bridgeport	Wheelabrator Bridgeport, Lp	GSI000614	Stormwater Associated With Industrial Activities	Wheelabrator Bridgeport, Lp	6 Howard Avenue	18
Bridgeport	Global Companies, Llc	GSI000688	Stormwater Associated With Industrial Activities	Global Companies, Llc	1 Eagles Nest Road	48
Bridgeport	Sikorsky Aircraft Corporation	GSI000772	Stormwater Associated With Industrial Activities	Sikorsky Aircraft Corporation	1210 South Avenue	19
Bridgeport	Reliable Plating & Polishing Co., Inc.	GSI000881	Stormwater Associated With Industrial Activities	Reliable Plating & Polishing Co.,	80 Bishop Avenue	69

Table 5: Permitted facilities that may be affecting the Bridgeport Estuary (continued)

Town	Client	Permit ID	Permit Type	Site Name	Address	Map #
Bridgeport	Hillard Bloom Shellfish Inc	GS1001043	Stormwater Associated With Industrial Activities	Bridgeport Drydock	59 Pembroke Street	55
Bridgeport	Santa Fuel Inc.	GS1001060	Stormwater Associated With Industrial Activities	Santa Fuel Inc.	154 Admiral Street	23
Bridgeport	Greater Bridgeport Transit District	GS1001118	Stormwater Associated With Industrial Activities	Greater Bridgeport Transit District	1 Cross Street	73
Bridgeport	Bridgeport Energy, Llc	GS1001119	Stormwater Associated With Industrial Activities	Bridgeport Energy, Llc	10 Atlantic Street	31
Bridgeport	Feroleto Steel Company, Inc.	GS1001130	Stormwater Associated With Industrial Activities	Feroleto Steel Company, Inc.	300 Scofield Avenue	20
Bridgeport	Hawie Manufacturing Co.	GS1001134	Stormwater Associated With Industrial Activities	Hawie Manufacturing Co.	73 River Street	81
Bridgeport	Inland Fuel Terminals, Inc.	GS1001400	Stormwater Associated With Industrial Activities	Inland Fuel Terminals, Inc.	215 Admiral Street	24
Bridgeport	O & G Industries, Inc.	GS1001560	Stormwater Associated With Industrial Activities	Bridgeport Stone Splitting Yard	471 Hancock Avenue	27
Bridgeport	O & G Industries, Inc.	GS1001568	Stormwater Associated With Industrial Activities	O & G Industries, Inc.	1225 Seaview Avenue	65
Bridgeport	PSEG Power Connecticut, Llc	GS1001601	Stormwater Associated With Industrial Activities	Bridgeport Harbor Station	1 Atlantic Street	71
Bridgeport	Captain's Cove Marina Of Bridgeport, Inc.	GS1001734	Stormwater Associated With Industrial Activities	Captain's Cove Marina Of Bridgeport, Inc.	#1 Bostwick Avenue	12
Bridgeport	American Medical Response Of Connecticut, Inc.	GS1001855	Stormwater Associated With Industrial Activities	American Medical Response (Fleet Maintenance)	155 4Th Street	63
Bridgeport	Derecktor Shipyards Conn, Llc	GS1001869	Stormwater Associated With Industrial Activities	Derecktor Shipyards	837 Seaview Avenue	53
Bridgeport	City Of	GS1001900	Stormwater Associated	Vehicle	695 Seaview	45

	Bridgeport		With Industrial Activities	Complex & East Side WWTP	Avenue	
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Table 5: Permitted facilities that may be affecting the Bridgeport Estuary (continued)

Town	Client	Permit ID	Permit Type	Site Name	Address	Map #
Bridgeport	Bridgeport Auto Recycling	GSI001962	Stormwater Associated With Industrial Activities	Bridgeport Auto Recycling	440 Central Avenue	49
Bridgeport	Global Companies, Llc	GSI001989	Stormwater Associated With Industrial Activities	Global Companies, Llc	1 Eagles Nest Road	47
Bridgeport	Enviro Express, Inc.	GSI002005	Stormwater Associated With Industrial Activities	Enviro Express, Inc.	225 Howard Avenue	22
Bridgeport	Dattco, Inc.	GSI002031	Stormwater Associated With Industrial Activities	Dattco, Inc.	44 River Street	82
Bridgeport	O & G Industries, Inc.	GSI002088	Stormwater Associated With Industrial Activities	Bridgeport Storage Yard	1240 Seaview Avenue	66
Bridgeport	O & G Industries, Inc.	GSI002088	Stormwater Associated With Industrial Activities	Bridgeport Storage Yard	1240 Seaview Avenue	67
Bridgeport	East Coast Auto Parts	GSI002136	Stormwater Associated With Industrial Activities	East Coast Auto Parts	14 River Street	80
Bridgeport	American Medical Response Of Connecticut, Inc.	GSI002137	Stormwater Associated With Industrial Activities	American Medical Response	335 Connecticut Avenue	62
Bridgeport	Connecticut Mustang Llc	GSI002176	Stormwater Associated With Industrial Activities	Connecticut Mustang Llc	5 Grant Street	75
Bridgeport	City Of Bridgeport	GSM000017 / 200902018	Part B Municipal Stormwater MS4	Bridgeport, City Of	MS4 Permit	57
Bridgeport	City Of Bridgeport	GSN001652	Stormwater Registration - Construction Activities >10 Acres	Veteran's Memorial Park Improvements	Off Madison Avenue	70
Bridgeport	United Rentals, Inc.	GSN001790	Stormwater Registration - Construction Activities 5-10 Acres	United Rentals	522 Housatonic Avenue	74

Bridgeport	Bridgeport Energy Llc	GSN001836	Stormwater Registration - Construction Activities 5-10 Acres	Bridgeport Energy Llc	10 Atlantic Street	32
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Table 5: Permitted facilities that may be affecting the Bridgeport Estuary (continued)

Town	Client	Permit ID	Permit Type	Site Name	Address	Map #
Bridgeport	CT DOT	GSN002103	Stormwater Registration - Construction Activities >10 Acres	East Bridgeport Rail Yard Improvements	Union Avenue	52
Bridgeport	Bridgeport Landing Development, Llc	GSN002170	Stormwater Registration - Construction Activities >10 Acres	Steelpointe Harbor	Pequonnock River	58
Fairfield	Town Of Fairfield	CT0101044	Surface Water Permit	Fairfield WPCF	330 One Rod Highway	4
Fairfield	Town Of Fairfield	CT0101044	Surface Water Permit	Fairfield Sewage Treatment	Unknown	6
Fairfield	Stop & Shop Supermarket Company Llc	GSC000089	Stormwater Discharge Associated With Commercial Activity	Stop & Shop Store #650	1160 Kings Highway Cutoff	10
Fairfield	Home Depot U.S.A., Inc.	GSC000174	Stormwater Discharge Associated With Commercial Activity	Home Depot #6206	541 Kings Highway Cutoff	14
Fairfield	Heim Bearings Co.	GSI001042	Stormwater Associated With Industrial Activities	Heim Bearings Co.	60 Round Hill Road	9
Fairfield	Town Of Fairfield	GSI001448	Stormwater Associated With Industrial Activities	Fairfield Transfer Station	One Rod Road	2
Fairfield	Town Of Fairfield	GSI001871	Stormwater Associated With Industrial Activities	Fairfield Yard Waste Facility	295 One Rod Highway	5
Fairfield	Town Of Fairfield	GSI001992	Stormwater Associated With Industrial Activities	Fairfield WPCF	330 One Rod Highway	3
Fairfield	MCP Metal Specialties, Inc.	GSI001999	Stormwater Associated With Industrial Activities	MCP Metal Specialties, Inc.	515 Commerce Drive	21
Fairfield	Town Of Fairfield	GSI002146	Stormwater Associated With Industrial Activities	Fairfield Transfer Station	One Rod Road	1

Fairfield	Town Of Fairfield	GSI002240	Stormwater Associated With Industrial Activities	South Benson Marina	471 Turney Road	8
Fairfield	First Student, Inc.	GSI002261	Stormwater Associated With Industrial Activities	First Student, Inc. No.20910	One Rod Highway	7

Table 5: Permitted facilities that may be affecting the Bridgeport Estuary (continued)

Town	Client	Permit ID	Permit Type	Site Name	Address	Map #
Fairfield	Town Of Fairfield	GSM000012	Part B Municipal Stormwater MS4	Fairfield, Town of	NA	NA
Fairfield	Blackrock Realty, Llc	GSN001793	Stormwater Registration - Construction Activities >10 Acres	Blackrock Realty, Llc	21 Black Rock Turnpike	15
Stratford	Sporting Goods Properties, Inc.	CT0030171	Surface Water Permit	Sporting Goods Properties, Inc.	1207 Prospect Drive	11
Stratford	Town Of Stratford	CT0101036	Surface Water Permit	Stratford WPCF	105 Beacon Point Road	60
Stratford	Bottling Group, Llc	GSC000249	Stormwater Discharge Associated With Commercial Activity	Bottling Group Warehouse	355 Benton Street	44
Stratford	CT DOT	GSI000065	Stormwater Associated With Industrial Activities	Stratford Maintenance Facility	Surf Avenue and Lordship Boulevard	43
Stratford	United Parcel Service, Inc.	GSI000239	Stormwater Associated With Industrial Activities	UPS Stratford Office	1010 Honeyspot Road	41
Stratford	Sartomer Company, Inc.	GSI000498	Stormwater Associated With Industrial Activities	Sartomer Company, Inc.	105 Ontario Street	50
Stratford	Cray Valley USA, Llc	GSI000498	Stormwater Associated With Industrial Activities	Cray Valley USA, Llc	105 Ontario Street	51
Stratford	U.S. Chrome Corporation	GSI000708	Stormwater Associated With Industrial Activities	U.S. Chrome Corporation	175 Garfield Avenue	26
Stratford	Connecticut Resource Recovery Authority	GSI000812	Stormwater Associated With Industrial Activities	Stratford Intermediate Processing Center	1410 Honeyspot Road Ext	35
Stratford	U.S. Army	GSI000878	Stormwater Associated With Industrial	US Army Stratford	550 Main Street	34

			Activities	Engine Plant		
Stratford	Hampford Research, Inc.	GSI000943	Stormwater Associated With Industrial Activities	Hampford Research, Inc.	54 Veterans Boulevard	61
Stratford	Federal Express Corporation	GSI000968	Stormwater Associated With Industrial Activities	Federal Express Corp (Oxca)	500 Lordship Boulevard	39

Table 5: Permitted facilities that may be affecting the Bridgeport Estuary (continued)

Town	Client	Permit ID	Permit Type	Site Name	Address	Map #
Stratford	Mr. Stratford Baling, Llc	GSI001071	Stormwater Associated With Industrial Activities	Mr. Stratford Baling, Llc	80 Garfield Avenue	42
Stratford	Bridgeport Fittings, Inc.	GSI001131	Stormwater Associated With Industrial Activities	Bridgeport Fittings, Inc.	705 Lordship Boulevard	30
Stratford	Pace Motor Lines, Inc.	GSI001166	Stormwater Associated With Industrial Activities	Pace Motor Lines, Inc.	1425 Honeyspot Road Ext	29
Stratford	Marine Holdings Of Stratford, Inc.	GSI001191	Stormwater Associated With Industrial Activities	Brewer's Stratford Marina	605 Broad Street	76
Stratford	Emsar, Inc.	GSI001222	Stormwater Associated With Industrial Activities	Emsar	125 Access Road	36
Stratford	Kramer's Used Auto Parts	GSI001598	Stormwater Associated With Industrial Activities	Kramer's Used Auto Parts	11 Old South Avenue	28
Stratford	Hampford Research, Inc.	GSI001772	Stormwater Associated With Industrial Activities	Hampford Research, Inc.	1255 West Broad Street	77
Stratford	Hampford Research, Inc.	GSI001772	Stormwater Associated With Industrial Activities	Hampford Research, Inc.	1255 West Broad Street	78
Stratford	Town Of Stratford	GSI002096	Stormwater Associated With Industrial Activities	Stratford WPCF	105 Beacon Point Road	59
Stratford	Sono Investments, Llc	GSI002115	Stormwater Associated With Industrial Activities	Arrc	140 Watson Boulevard	40
Stratford	CPP Global	GSI002202	Stormwater Associated	CPP Global	30 Moffitt	64

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			With Industrial Activities		Street	
Stratford	ABF Freight System, Inc.	GSI002293	Stormwater Associated With Industrial Activities	ABF Freight System, Inc.	1010 Woodend Road	37
Stratford	Town Of Stratford	GSM000105	Part B Municipal Stormwater MS4	Stratford, Town of	NA	NA

Table 6: Industrial permits affecting the Bridgeport Estuary and available fecal coliform data (colonies/100mL). The results cannot be compared to the water quality standard as there is no single sample shellfish standard for fecal coliform.

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Bridgeport	CRRA-Bridgeport TRF Station	GS1000097	Bridgeport Estuary	outfall 001(A)	09/25/01	600
Bridgeport	CRRA-Bridgeport TRF Station	GS1000097	Bridgeport Estuary	outfall 001(A)	09/26/02	8,300
Bridgeport	Remington Products Co.	GS1000302	Bridgeport Estuary	South parking lot	07/11/01	100
Bridgeport	Remington Products Co.	GS1000302	Bridgeport Estuary	South parking lot	08/20/02	>500
Bridgeport	Harborview Terminals, Inc.	GS1000343	Bridgeport Estuary	swale behind loading rack	04/13/04	112
Bridgeport	Harborview Terminals, Inc.	GS1000343	Bridgeport Estuary	swale behind loading rack	06/28/06	1,850
Bridgeport	Harborview Terminals, Inc.	GS1000343	Bridgeport Estuary	swale behind loading rack	07/10/06	700
Bridgeport	Harborview Terminals, Inc.	GS1000343	Bridgeport Estuary	swale behind loading rack	08/15/06	4,025
Bridgeport	Casco Products, Corp.	GS1000360	Bridgeport Estuary	Outfall #1	08/28/01	100
Bridgeport	Bridgeport United Recycling, Inc.	GS1000514	Bridgeport Estuary	Oil/H2O sep	09/14/01	6,000
Bridgeport	Bridgeport United Recycling, Inc.	GS1000514	Bridgeport Estuary	Oil/H2O sep	10/16/02	920
Bridgeport	Bridgeport United Recycling, Inc.	GS1000515	Bridgeport Estuary	container & pad CB	10/16/02	>2000
Bridgeport	Bridgeport United Recycling, Inc.	GS1000515	Bridgeport Estuary	Oil/H2O sep	09/25/01	>10,000
Bridgeport	General Electric Co.	GS1000534	Bridgeport Estuary	OF-1	09/20/01	36
Bridgeport	General Electric Co.	GS1000534	Bridgeport Estuary	SW-3	05/28/02	25
Bridgeport	General Electric Co.	GS1000534	Bridgeport Estuary	SW-3	06/18/03	100
Bridgeport	Marine Dock (Inactive)	GS1000566	Bridgeport Estuary	Bridgeport 001	03/13/01	0
Bridgeport	Marine Dock (Inactive)	GS1000566	Bridgeport Estuary	Bridgeport 001	08/29/02	0
Bridgeport	Marine Dock (Inactive)	GS1000566	Bridgeport Estuary	Bridgeport 001	05/08/03	260
Bridgeport	O & G Industries Inc.	GS1000594	Bridgeport	culvert from	09/20/01	10

			Estuary	trench drain		
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Table 6: Industrial permits affecting the Bridgeport Estuary and available fecal coliform data (colonies/100mL). The results cannot be compared to the water quality standard as there is no single sample shellfish standard for fecal coliform. (continued)

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Bridgeport	O & G Industries, Inc.	GS1000594	Bridgeport Estuary	001	08/29/02	1,320
Bridgeport	Wheelabrator Bridgeport, Lp	GS1000614	Bridgeport Estuary	DNS-004	07/17/01	3,100
Bridgeport	Wheelabrator Bridgeport, Lp	GS1000614	Bridgeport Estuary	B-SW-02-DAHR	09/15/02	TNTC
Bridgeport	Wheelabrator Bridgeport, Lp	GS1000614	Bridgeport Estuary	B-SW-01-DAHR	07/22/03	44,000
Bridgeport	Wheelabrator Bridgeport, Lp	GS1000614	Bridgeport Estuary	B-SW-03-2	07/22/03	TNTC
Bridgeport	Global Companies, Llc	GS1000688	Bridgeport Estuary	Discharge pipe at Johnsons Creek	09/26/02	1,400
Bridgeport	Global Companies, Llc	GS1000688	Bridgeport Estuary	Discharge pipe at Johnsons Creek	09/19/03	450
Bridgeport	Cogent Power	GS1000747	Bridgeport Estuary	Outfall 001	08/20/02	>1,500
Bridgeport	Sikorsky Aircraft Corporation	GS1000772	Bridgeport Estuary	Bridgeport 001	08/20/02	48
Bridgeport	Sikorsky Aircraft Corporation	GS1000772	Bridgeport Estuary	Bridgeport 001	07/11/01	0
Bridgeport	Sikorsky Aircraft Corporation	GS1000772	Bridgeport Estuary	Bridgeport 002	07/11/01	8
Bridgeport	Sikorsky Aircraft Corporation	GS1000772	Bridgeport Estuary	Bridgeport 002	08/20/02	0
Bridgeport	Sikorsky Aircraft Corporation	GS1000772	Bridgeport Estuary	Bridgeport 003	07/11/01	16
Bridgeport	Sikorsky Aircraft Corporation	GS1000772	Bridgeport Estuary	Bridgeport 003	08/20/02	150
Bridgeport	Sikorsky Aircraft Corporation	GS1000772	Bridgeport Estuary	Bridgeport 005	07/11/01	6
Bridgeport	Sikorsky Aircraft Corporation	GS1000772	Bridgeport Estuary	Bridgeport 005	08/20/02	0
Bridgeport	Enviro Express	GS1000788	Bridgeport Estuary	Outfall A	09/25/01	1,000
Bridgeport	Enviro Express	GS1000788	Bridgeport	Outfall A	09/26/02	100

			Estuary			
Bridgeport	Bridgeport Machines	GSI000810	Bridgeport Estuary	SW-1	11/15/01	900

Table 6: Industrial permits affecting the Bridgeport Estuary and available fecal coliform data (colonies/100mL). The results cannot be compared to the water quality standard as there is no single sample shellfish standard for fecal coliform. (continued)

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Bridgeport	Bridgeport Machines	GSI000810	Bridgeport Estuary	SW-1	06/12/02	20
Bridgeport	Bridgeport Machines	GSI000810	Bridgeport Estuary	SW-2	11/15/01	220
Bridgeport	Bridgeport Machines	GSI000810	Bridgeport Estuary	SW-2	06/12/02	40
Bridgeport	Reliable Plating & Polishing Co., Inc.	GSI000881	Bridgeport Estuary	001	03/26/02	100
Bridgeport	Martin Marietta Magnesia Specialty	GSI000890	Bridgeport Estuary	Outfall #1 (MM-1)	01/24/02	10
Bridgeport	Martin Marietta Magnesia Specialty	GSI000890	Bridgeport Estuary	Outfall #1 (MM-1)	11/06/02	100
Bridgeport	Martin Marietta Magnesia Specialty	GSI000890	Bridgeport Estuary	Outfall #1 (MM-1)	08/05/03	1,900
Bridgeport	Greater Bridgeport Transit District	GSI001118	Bridgeport Estuary	CB	09/14/01	410
Bridgeport	Greater Bridgeport Transit District	GSI001118	Bridgeport Estuary	CB	09/23/02	150
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport Estuary	intake structure	01/19/01	10
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport Estuary	intake structure	08/23/01	10
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport Estuary	intake structure	09/20/01	880
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport Estuary	intake structure	03/20/02	200
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport Estuary	intake structure	06/04/03	1
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport Estuary	intake structure	07/16/03	10
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport Estuary	manhole MH-1	01/19/01	200
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport Estuary	manhole MH-1	08/23/01	530
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport	manhole MH-1	03/20/02	100

			Estuary			
Bridgeport	Bridgeport Energy, Llc	GSI001119	Bridgeport Estuary	manhole MH-1	06/04/03	330
Bridgeport	Feroletto Steel Company, Inc.	GSI001130	Bridgeport Estuary	001	09/21/01	620

Table 6: Industrial permits affecting the Bridgeport Estuary and available fecal coliform data (colonies/100mL). The results cannot be compared to the water quality standard as there is no single sample shellfish standard for fecal coliform. (continued)

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Bridgeport	Feroletto Steel Company, Inc.	GSI001130	Bridgeport Estuary	002	08/29/02	>2,000
Bridgeport	Hawie Manufacturing Co.	GSI001134	Bridgeport Estuary	new building loading dock	09/14/01	>600
Bridgeport	Hawie Manufacturing Co.	GSI001134	Bridgeport Estuary	SD Park City Building	09/14/01	>600
Bridgeport	Hawie Manufacturing Co.	GSI001134	Bridgeport Estuary	SD Park City Building	08/04/03	80
Bridgeport	Emsar Inc	GSI001221	Bridgeport Estuary	SW-001	09/20/01	2,800
Bridgeport	Emsar Inc	GSI001221	Bridgeport Estuary	SW-002	09/20/01	500
Bridgeport	Laidlaw Transit	GSI001297	Bridgeport Estuary	CB north side	11/10/00	25,000
Bridgeport	Inland Fuel Terminals, Inc.	GSI001400	Bridgeport Estuary	2001	10/18/00	1,000
Bridgeport	Inland Fuel Terminals, Inc.	GSI001400	Bridgeport Estuary	2001	01/31/02	100
Bridgeport	Inland Fuel Terminals, Inc.	GSI001400	Bridgeport Estuary	2001	09/27/02	70,000
Bridgeport	Logistec USA	GSI001419	Bridgeport Estuary	OF-1 (Cilco 001)	08/20/02	>600
Bridgeport	Logistec USA	GSI001419	Bridgeport Estuary	OF-2 (Cilco 002)	08/20/02	>600
Bridgeport	Logistec USA	GSI001419	Bridgeport Estuary	Outfall 1 (LOG-OF1)	09/14/01	>600
Bridgeport	Logistec USA	GSI001419	Bridgeport Estuary	Outfall 2 (LOG-OF2)	06/21/01	10
Bridgeport	Wisvest CT, LLC	GSI001434	Bridgeport Estuary	004	09/14/01	100
Bridgeport	Wisvest CT, LLC	GSI001434	Bridgeport Estuary	004	08/29/02	20,000

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Bridgeport	Wisvest CT, LLC	GSI001434	Bridgeport Estuary	011	09/14/01	4,400
Bridgeport	Wisvest CT, LLC	GSI001434	Bridgeport Estuary	011	08/29/02	1,000
Bridgeport	Wisvest CT, LLC	GSI001434	Bridgeport Estuary	021	09/14/01	700

Table 6: Industrial permits affecting the Bridgeport Estuary and available fecal coliform data (colonies/100mL). The results cannot be compared to the water quality standard as there is no single sample shellfish standard for fecal coliform. (continued)

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Bridgeport	Wisvest CT, LLC	GSI001434	Bridgeport Estuary	021	08/29/02	100
Bridgeport	Alloy Engineering Company	GSI001447	Bridgeport Estuary	Driveway at Dekalb Avenue	09/20/01	>600
Bridgeport	Alloy Engineering Company	GSI001447	Bridgeport Estuary	Driveway at Dekalb Avenue	09/15/02	10
Fairfield	Heim Bearings Co.	GSI001042	Bridgeport Estuary	SW-1	06/18/03	3,100
Fairfield	Heim Bearings Co.	GSI001042	Bridgeport Estuary	SW-1	07/21/03	>2,000
Stratford	Stratford Maintenance Facility	GSI000065	Bridgeport Estuary	001	11/20/01	200
Stratford	American Frozen Foods	GSI000157	Bridgeport Estuary	CB#1	09/14/01	3,400
Stratford	Blase Manufacturing	GSI000158	Bridgeport Estuary	SD @ property exit	09/20/01	>600
Stratford	Blase Manufacturing	GSI000158	Bridgeport Estuary	CT P1	12/20/02	2,100
Stratford	United Parcel Service	GSI000239	Bridgeport Estuary	outfall #1	09/20/01	600
Stratford	United Parcel Service	GSI000239	Bridgeport Estuary	outfall #1	09/26/02	200
Stratford	United Parcel Service	GSI000239	Bridgeport Estuary	outfall #2	09/20/01	10
Stratford	Ross & Roberts	GSI000258	Bridgeport Estuary	outfall 001	03/26/02	100
Stratford	Ross & Roberts	GSI000258	Bridgeport Estuary	outfall 001	07/16/03	0
Stratford	Blase Manufacturing	GSI000313	Bridgeport Estuary	Bldg #2	09/20/01	>600
Stratford	Blase Manufacturing	GSI000313	Bridgeport	CT P2	12/20/02	3,800

			Estuary			
Stratford	ExxonMobil Chemical Co-Films Div	GS1000392	Bridgeport Estuary	CB#1	09/14/01	>600
Stratford	ExxonMobil Chemical Co-Films Div	GS1000392	Bridgeport Estuary	CB#1	09/16/02	>600
Stratford	ExxonMobil Chemical Co-Films Div	GS1000392	Bridgeport Estuary	CB#1	07/22/03	100
Stratford	ExxonMobil Chemical Co-Films Div	GS1000392	Bridgeport Estuary	CB#2	09/14/01	10

Table 6: Industrial permits affecting the Bridgeport Estuary and available fecal coliform data (colonies/100mL). The results cannot be compared to the water quality standard as there is no single sample shellfish standard for fecal coliform. (continued)

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Stratford	ExxonMobil Chemical Co-Films Div	GS1000392	Bridgeport Estuary	CB#2	09/16/02	>600
Stratford	ExxonMobil Chemical Co-Films Div	GS1000392	Bridgeport Estuary	CB#2	07/22/03	800
Stratford	U.S. Chrome Corporation	GS1000708	Bridgeport Estuary	Rear roof	05/28/02	10
Stratford	U.S. Chrome Corporation	GS1000708	Bridgeport Estuary	Rear roof	08/20/02	>600
Stratford	U.S. Chrome Corporation	GS1000708	Bridgeport Estuary	Rear roof	07/07/03	4,700
Stratford	U.S. Chrome Corporation	GS1000708	Bridgeport Estuary	Rear roof	09/28/04	100
Stratford	Flow Polymers, Inc.	GS1000773	Bridgeport Estuary	Outfall 001	09/20/01	7,300
Stratford	Flow Polymers, Inc.	GS1000773	Bridgeport Estuary	133425	06/05/02	TNTC
Stratford	Flow Polymers, Inc.	GS1000773	Bridgeport Estuary	136134	06/18/03	TNTC
Stratford	City of Bridgeport/Sikorsky Airport	GS1000833	Bridgeport Estuary	A	09/20/01	26,800
Stratford	City of Bridgeport/Sikorsky Airport	GS1000833	Bridgeport Estuary	A	09/26/02	100
Stratford	City of Bridgeport/Sikorsky Airport	GS1000833	Bridgeport Estuary	B	09/20/01	15,400
Stratford	City of Bridgeport/Sikorsky Airport	GS1000833	Bridgeport Estuary	B	09/26/02	100
Stratford	City of Bridgeport/Sikorsky Airport	GS1000833	Bridgeport Estuary	C	09/20/01	TNTC
Stratford	City of Bridgeport/Sikorsky	GS1000833	Bridgeport	C	09/26/02	100

	Airport		Estuary			
Stratford	City of Bridgeport/Sikorsky Airport	GS1000833	Bridgeport Estuary	D	09/20/01	TNTC
Stratford	City of Bridgeport/Sikorsky Airport	GS1000833	Bridgeport Estuary	D	09/26/02	100
Stratford	City of Bridgeport/Sikorsky Airport	GS1000833	Bridgeport Estuary	E	09/20/01	25,800
Stratford	US Army Stratford Engine Plant	GS1000878	Bridgeport Estuary	009	09/14/01	1,200
Stratford	US Army Stratford Engine Plant	GS1000878	Bridgeport Estuary	009	08/20/02	8

Table 6: Industrial permits affecting the Bridgeport Estuary and available fecal coliform data (colonies/100mL). The results cannot be compared to the water quality standard as there is no single sample shellfish standard for fecal coliform. (continued)

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Stratford	US Army Stratford Engine Plant	GS1000878	Bridgeport Estuary	009	06/04/03	250
Stratford	US Army Stratford Engine Plant	GS1000878	Bridgeport Estuary	010	09/14/01	1,100
Stratford	US Army Stratford Engine Plant	GS1000878	Bridgeport Estuary	010	08/20/02	2
Stratford	US Army Stratford Engine Plant	GS1000878	Bridgeport Estuary	010	06/04/03	380
Stratford	US Army Stratford Engine Plant	GS1000878	Bridgeport Estuary	011	09/14/01	1,200
Stratford	US Army Stratford Engine Plant	GS1000878	Bridgeport Estuary	011	08/20/02	920
Stratford	Hampford Research, Inc.	GS1000943	Bridgeport Estuary	near loading dock	07/16/03	35,000
Stratford	Federal Express Corp (Oxca)	GS1000968	Bridgeport Estuary	CB E side of building	12/13/01	10
Stratford	Federal Express Corp (Oxca)	GS1000968	Bridgeport Estuary	CB E side of building	10/16/02	5,600
Stratford	Federal Express Corp (Oxca)	GS1000968	Bridgeport Estuary	CB E side of building	10/17/06	>2,000
Stratford	Mr. Stratford Baling, Llc	GS1001071	Bridgeport Estuary	1	03/27/02	90
Stratford	Mr. Stratford Baling, Llc	GS1001071	Bridgeport Estuary	1	07/07/03	>400
Stratford	Mr. Stratford Baling, Llc	GS1001071	Bridgeport Estuary	02	11/30/00	>6,000
Stratford	Bridgeport Fittings, Inc.	GS1001131	Bridgeport	roof drain-die	05/21/01	10

			Estuary	casting dept		
Stratford	Bridgeport Fittings, Inc.	GSI001131	Bridgeport Estuary	roof drain-die casting dept	08/29/02	10
Stratford	Pace Motor Lines, Inc.	GSI001166	Bridgeport Estuary	unknown	03/13/02	200
Stratford	Brewer's Stratford Marina	GSI001191	Bridgeport Estuary	lift well	11/20/01	300
Stratford	Brewer's Stratford Marina	GSI001191	Bridgeport Estuary	lift well	10/11/02	15
Stratford	Brewer's Stratford Marina	GSI001191	Bridgeport Estuary	south yard	11/20/01	100
Stratford	Emsar Inc	GSI001222	Bridgeport Estuary	SW-002	09/20/01	1,100

Table 6: Industrial permits affecting the Bridgeport Estuary and available fecal coliform data (colonies/100mL). The results cannot be compared to the water quality standard as there is no single sample shellfish standard for fecal coliform. (continued)

Town	Location	Permit Number	Receiving Water	Sample Location	Sample Date	Result
Stratford	Emsar Inc	GSI001222	Bridgeport Estuary	SW-002	08/20/02	TNTC
Stratford	Longwood Engineered Products	GSI001346	Bridgeport Estuary	DSN 001	09/25/01	>600
Stratford	Longwood Engineered Products	GSI001346	Bridgeport Estuary	DSN 001	09/15/02	>600

Municipal Stormwater Permitted Sources

Per the EPA Phase II Stormwater rule all municipal storm sewer systems (MS4s) operators located within US Census Bureau Urbanized Areas (UAs) must be covered under MS4 permits regulated by the appropriate State agency. There is an EPA waiver process that municipalities can apply for to not participate in the MS4 program. In Connecticut, EPA has granted such waivers to 19 municipalities. All participating municipalities within UAs in Connecticut are currently regulated under MS4 permits by CT DEEP staff in the MS4 program.

The US Census Bureau defines a UA as a densely settled area that has a census population of at least 50,000. A UA generally consists of a geographic core of block groups or blocks that exceeds the 50,000 people threshold and has a population density of at least 1,000 people per square mile. The UA will also include adjacent block groups and blocks with at least 500 people per square mile. A UA consists of all or part of one or more incorporated places and/or census designated places, and may include additional territory outside of any place. (67 FR 11663)

For the 2000 Census a new geographic entity was created to supplement the UA blocks of land. This created a block known as an Urban Cluster (UC) and is slightly different than the UA. The definition of a UC is a densely settled area that has a census population of 2,500 to 49,999. A UC generally consists of a geographic core of block groups or blocks that have a population density of at least 1,000 people per square mile, and adjacent block groups and blocks with at least 500 people per square mile. A UC

consists of all or part of one or more incorporated places and/or census designated places; such a place(s) together with adjacent territory; or territory outside of any place. The major difference is the total population cap of 49,999 people for a UC compared to >50,000 people for a UA. (67 FR 11663)

While it is possible that CT DEEP will be expanding the reach of the MS4 program to include UC municipalities in the near future they are not currently under the permit. However, the GIS layers used to create the MS4 maps in this Statewide TMDL did include both UA and UC blocks. This factor creates some municipalities that appear to be within an MS4 program that are not currently regulated through an MS4 permit. This oversight can explain a municipality that is at least partially shaded grey in the maps and there are no active MS4 reporting materials or information included in the appropriate appendix. While these areas are not technically in the MS4 permit program, they are still considered urban by the cluster definition above and are likely to contribute similar stormwater discharges to affected waterbodies covered in this TMDL.

As previously noted, EPA can grant a waiver to a municipality to preclude their inclusion in the MS4 permit program. One reason a waiver could be granted is a municipality with a total population less than 1000 people, even if the municipality was located in a UA. There are 19 municipalities in Connecticut that have received waivers, this list is: Andover, Bozrah, Canterbury, Coventry, East Hampton, Franklin, Haddam, Killingworth, Litchfield, Lyme, New Hartford, Plainfield, Preston, Salem, Sherman, Sprague, Stafford, Washington, and Woodstock. There will be no MS4 reporting documents from these towns even if they are displayed in an MS4 area in the maps of this document.

The list of US Census UCs is defined by geographic regions and is named for those regions, not necessarily by following municipal borders. In Connecticut the list of UCs includes blocks in the following Census Bureau regions: Colchester, Danielson, Lake Pocotopaug, Plainfield, Stafford, Storrs, Torrington, Willimantic, Winsted, and the border area with Westerly, RI (67 FR 11663). Any MS4 maps showing these municipalities may show grey areas that are not currently regulated by the CT DEEP MS4 permit program.

The impaired segments in the Bridgeport Estuary are located within the City of Bridgeport and the Towns of Fairfield and Stratford, CT. These municipalities have designated urban areas, as defined by the U.S. Census Bureau and are required to comply with the General Permit for the Discharge of Stormwater from Small Municipal Storm Sewer Systems (MS4 permit) issued by CT DEEP (Figure 5). This general permit is only applicable to municipalities that are identified in Appendix A of the MS4 permit that contain designated urban areas and discharge stormwater via a separate storm sewer system to surface waters of the State. The permit requires municipalities to develop a Stormwater Management Plan (SMP) to reduce the discharge of pollutants as well as protect water quality. The MS4 permit is discussed further in the "TMDL Implementation Guidance" section of the core TMDL document. Additional information regarding stormwater management and the MS4 permit can be obtained on CTDEEP's website (http://www.ct.gov/dep/cwp/view.asp?a=2721&q=325702&depNav_GID=1654).

There are potentially eight MS4 outfalls that have been sampled for *E. coli* bacteria in the watershed in Bridgeport and Fairfield, discharging directly to the shoreline of LIS or indirectly through Ash Creek (Table 7). Although the results cannot be compared to the water quality standard as there is no single sample shellfish standard for *E. coli*, high counts of greater than 4,000 colonies/100 mL were detected at five of the six outfalls in Bridgeport and one of the two outfalls in Fairfield.

Figure 5: MS4 areas near the Bridgeport Estuary

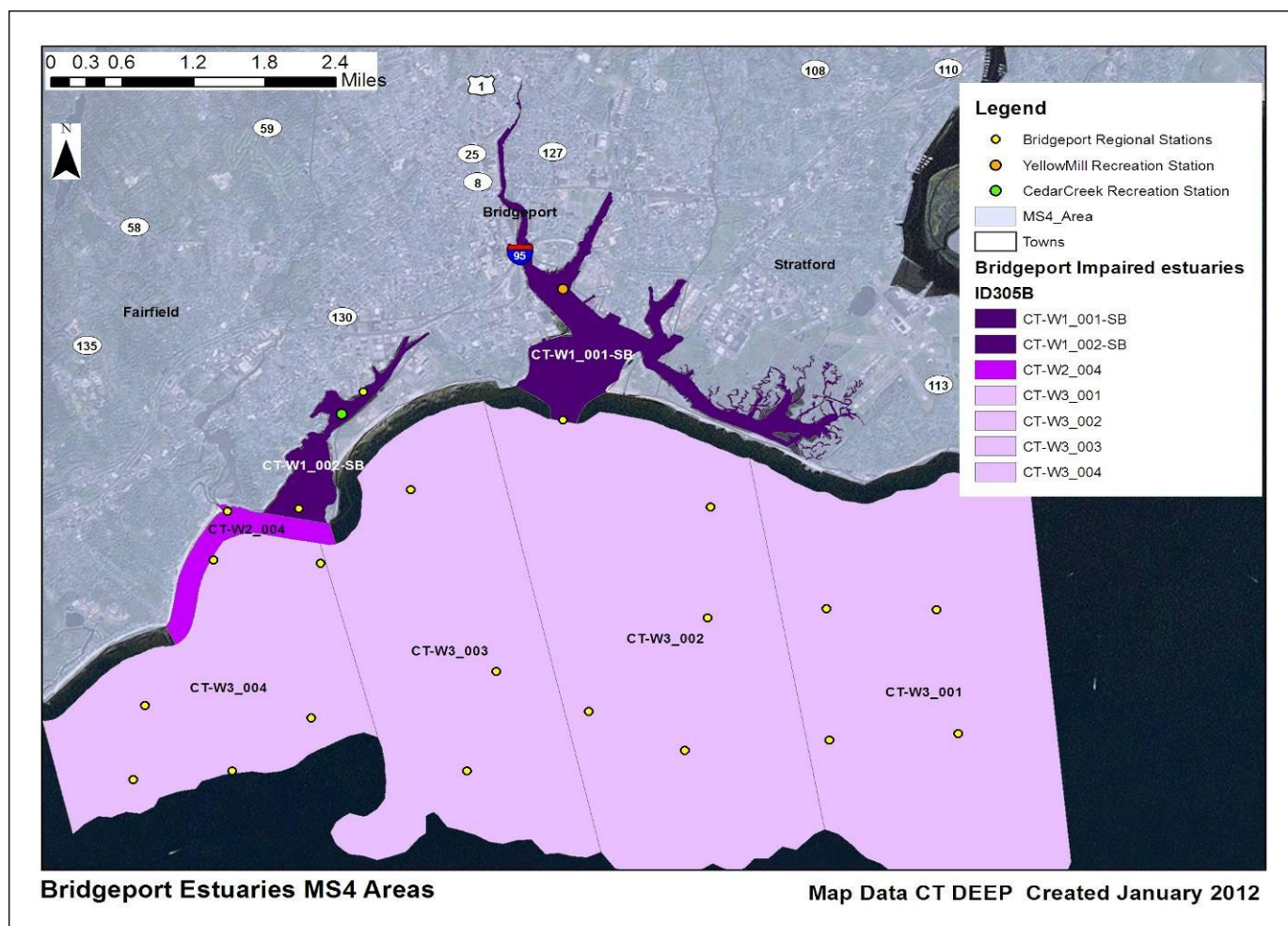


Table 7: List of MS4 sample locations and *E. coli* (colonies/100 mL) results in the Bridgeport Estuary. The results cannot be compared to the water quality standard as there is no single sample shellfish standard for *E. coli*.

Town	Location	MS4 Type	Receiving Waters	Sample Date	Result
Bridgeport	Boston Avenue and Pembroke Street	Industrial	LIS	12/01/04	0
Bridgeport	Boston Avenue and Pembroke Street	Commercial	LIS	10/17/06	3,920
Bridgeport	Boston Avenue and Pembroke Street	Residential	LIS	10/17/06	3,720
Bridgeport	Boston Avenue and Pembroke Street	Commercial	LIS	10/19/07	1,610
Bridgeport	Boston Avenue and Pembroke Street	Commercial	LIS	09/06/08	400
Bridgeport	Boston Avenue and Pembroke Street	Commercial	LIS	07/21/09	300
Bridgeport	Boston Avenue and Pembroke Street	Commercial	LIS	09/16/10	>4,000
Bridgeport	Connecticut Avenue	Industrial	LIS	12/01/04	43
Bridgeport	Connecticut Avenue	Industrial	LIS	10/17/06	0
Bridgeport	Connecticut Avenue	Industrial	LIS	10/19/07	1,260
Bridgeport	Connecticut Avenue	Industrial	LIS	09/06/08	1,840
Bridgeport	Connecticut Avenue	Commercial	LIS	07/21/09	4,240

Table 7: List of MS4 sample locations and *E. coli* (colonies/100 mL) results in the Bridgeport Estuary. The results cannot be compared to the water quality standard as there is no single sample shellfish standard for *E. coli*. (continued)

Town	Location	MS4 Type	Receiving Waters	Sample Date	Result
Bridgeport	Connecticut Avenue	Commercial	LIS	09/16/10	>4,000
Bridgeport	Fairview Avenue and Chamberlain Pond	Industrial	LIS	12/01/04	81
Bridgeport	Fairview Avenue and Chamberlain Pond	Commercial	LIS	10/17/06	3,120
Bridgeport	Fairview Avenue and Chamberlain Pond	Commercial	LIS	10/19/07	356
Bridgeport	Fairview Avenue and Chamberlain Pond	Commercial	LIS	09/06/08	1,680
Bridgeport	Fairview Avenue and Chamberlain Pond	Residential	LIS	07/21/09	7,680
Bridgeport	Fairview Avenue and Chamberlain Pond	Commercial	LIS	09/22/10	>4,000
Bridgeport	Gilman Street and Lake Avenue	Residential	LIS	12/01/04	4
Bridgeport	Gilman Street and Lake Avenue	Residential	LIS	10/19/07	1,600
Bridgeport	Gilman Street and Lake Avenue	Residential	LIS	09/06/08	720
Bridgeport	Gilman Street and Lake Avenue	Residential	LIS	07/21/09	3,440
Bridgeport	Gilman Street and Lake Avenue	Commercial	LIS	09/22/10	>4,000
Bridgeport	Waldemere Street	Commercial	LIS	12/01/04	26
Bridgeport	Waldemere Street	Residential	LIS	10/17/06	560
Bridgeport	Waldemere Street	Residential	LIS	10/19/07	1,360
Bridgeport	Waldemere Street	Residential	LIS	09/06/08	1,520
Bridgeport	Waldemere Street	Commercial	LIS	07/21/09	1,140

Bridgeport	Waldemere Street	Commercial	LIS	09/16/10	3,680
Bridgeport	Water Street	Commercial	LIS	12/01/04	167
Bridgeport	Water Street	Industrial	LIS	10/17/06	2,880
Bridgeport	Water Street	Industrial	LIS	10/19/07	1,440
Bridgeport	Water Street	Industrial	LIS	09/06/08	560
Bridgeport	Water Street	Commercial	LIS	07/21/09	500
Bridgeport	Water Street	Commercial	LIS	09/16/10	>4,000
Fairfield	Black Rock Turnpike	Industrial	Ash Creek	04/27/05	24
Fairfield	Black Rock Turnpike	Industrial	Ash Creek	02/03/06	1,250
Fairfield	Black Rock Turnpike	Industrial	Ash Creek	11/08/06	280
Fairfield	Black Rock Turnpike	Industrial	Ash Creek	04/12/07	160
Fairfield	Black Rock Turnpike	Industrial	Ash Creek	04/04/08	20
Fairfield	Black Rock Turnpike	Industrial	Ash Creek	06/18/09	1,560
Fairfield	Black Rock Turnpike	Industrial	Ash Creek	10/15/10	1,800
Fairfield	Timothy Street	Residential	Ash Creek	04/04/08	120
Fairfield	Timothy Street	Residential	Ash Creek	06/18/09	5,000

Publicly Owned Treatment Works

The Bridgeport West Side Water Pollution Control Facility (WPCF) (CT0100056) is located at 205 Bostwick Avenue on Cedar Creek leading to Black Rock Harbor and has the potential to impact the shellfish growing waters in the Bridgeport Estuary (Bridgeport, 2005). The Bridgeport East Side WPCF (CT0101010) is located at 695 Seaview Avenue discharging to Bridgeport Harbor and also has the potential to impact the shellfish growing waters in the Bridgeport Estuary. According to the 2005 Bridgeport Estuary Report, the Interstate Environmental Commission (IEC) inspected the effluent from 2003-2005 and reported that both plants exceeded fecal coliform limits three times in 2005 and were likely to fail under normal operating conditions. For the Bridgeport East Side WPCF, there were 35 bypasses in 2003 resulting in 24 shellfish bed closures in Fairfield, 55 bypasses in 2004 resulting in 22 closures in Fairfield, and 51 bypasses in 2005 resulting in 22 closures in Fairfield and 12 closures in Stratford. In 2005, a \$68 million project was underway to renovate the WPCFs. The Bridgeport West Side WPCF also uses a 24-hour computer monitoring system to control CSO regulators within the municipality. Bacteria data from the effluent of the Bridgeport West and East Side WPCFs are included in Table 8. Both plants exceeded their 7-day geometric mean permit limits on multiple sampling dates.

Table 8: Wastewater treatment plant fecal coliform (colonies/100 mL) data discharging to the Bridgeport Estuary

Town	Permitee	Permit Number	Receiving Water	Date	30-Day Geometric Mean	7-Day Geometric Mean
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	01/31/2009	1	2
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	03/31/2009	7	35
Bridgeport	Bridgeport East	CT0101010	Bridgeport Estuary -	04/30/2009	3	6

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	WPCF		Bridgeport Harbor			
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	05/31/2009	1	2
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	06/30/2009	2	7
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	07/31/2009	9	37
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	08/31/2009	7	2160
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	09/30/2009	10	10
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	10/31/2009	3	23
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	11/30/2009	1	1
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	01/31/2010	8	196
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	02/28/2010	3	3
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	03/31/2010	12	12
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	04/30/2010	1	3

Table 8: Wastewater treatment plant fecal coliform (colonies/100 mL) data discharging to the Bridgeport Estuary (continued)

Town	Permittee	Permit Number	Receiving Water	Date	30-Day Geometric Mean	7-Day Geometric Mean
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	05/31/2010	7	600
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	06/30/2010	21	520
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	07/31/2010	38	360
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	08/31/2010	11	57
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	09/30/2010	14	1120
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	10/31/2010	3	52
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	11/30/2010	6	168
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	12/31/2010	10	312
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	01/31/2011	3	5
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	02/28/2011	10	10
Bridgeport	Bridgeport East	CT0101010	Bridgeport Estuary -	03/31/2011	17	2000

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	WPCF		Bridgeport Harbor			
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	04/30/2011	39	2000
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	05/31/2011	26	2000
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	06/30/2011	24	830
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	07/31/2011	25	2000
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	08/31/2011	18	330
Bridgeport	Bridgeport East WPCF	CT0101010	Bridgeport Estuary - Bridgeport Harbor	09/30/2011	23	2000
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	01/31/2009	9	2200
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	02/28/2009	2	7
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	03/31/2009	4	208
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	04/30/2009	5	35
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	05/31/2009	3	14
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	06/30/2009	19	2180

Table 8: Wastewater treatment plant fecal coliform (colonies/100 mL) data discharging to the Bridgeport Estuary (continued)

Town	Permittee	Permit Number	Receiving Water	Date	30-Day Geometric Mean	7-Day Geometric Mean
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	07/31/2009	13	236
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	08/31/2009	11	420
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	09/30/2009	19	188
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	10/31/2009	13	400
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	11/30/2009	2	31
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	12/31/2009	4	464
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	01/31/2010	2	19
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	02/28/2010	6	1080
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	03/31/2010	5	940
Bridgeport	Bridgeport West	CT0100056	Bridgeport Estuary -	04/30/2010	2	37

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	WPCF		LIS via Cedar Creek			
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	05/31/2010	4	78
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	06/30/2010	20	620
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	07/31/2010	10	93
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	08/31/2010	31	1840
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	09/30/2010	51	1760
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	10/31/2010	5	47
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	11/30/2010	8	1760
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	12/31/2010	4	37
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	01/31/2011	10	109
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	02/28/2011	21	300
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	03/31/2011	18	600
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	04/30/2011	44	2000
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	05/31/2011	67	2000

Table 8: Wastewater treatment plant fecal coliform (colonies/100 mL) data discharging to the Bridgeport Estuary (continued)

Town	Permittee	Permit Number	Receiving Water	Date	30-Day Geometric Mean	7-Day Geometric Mean
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	06/30/2011	43	2000
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	07/31/2011	28	680
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	08/31/2011	109	200
Bridgeport	Bridgeport West WPCF	CT0100056	Bridgeport Estuary - LIS via Cedar Creek	09/30/2011	106	1200
30-Day Geometric Mean Permit Limit = 200 colonies/100 mL						
7-Day Geometric Mean Permit Limit = 400 colonies/100 mL						

Non-point Sources

Non-point source (NPS) pollution comes from many diffuse sources and is more difficult to identify and control. NPS pollution is often associated with certain land-use practices. Examples of NPS that can contribute bacteria to surface waters include stormwater runoff, illicit discharges, insufficient septic

systems, pet and wildlife waste, agriculture, and contact recreation (swimming or wading). With the waters of the Bridgeport Estuary being tidally influenced, many bacterial sources that appear to be downstream of the impaired segment may be affecting the water quality in upstream segments. Potential sources of NPS to the impaired segments in the Bridgeport Estuary are described below.

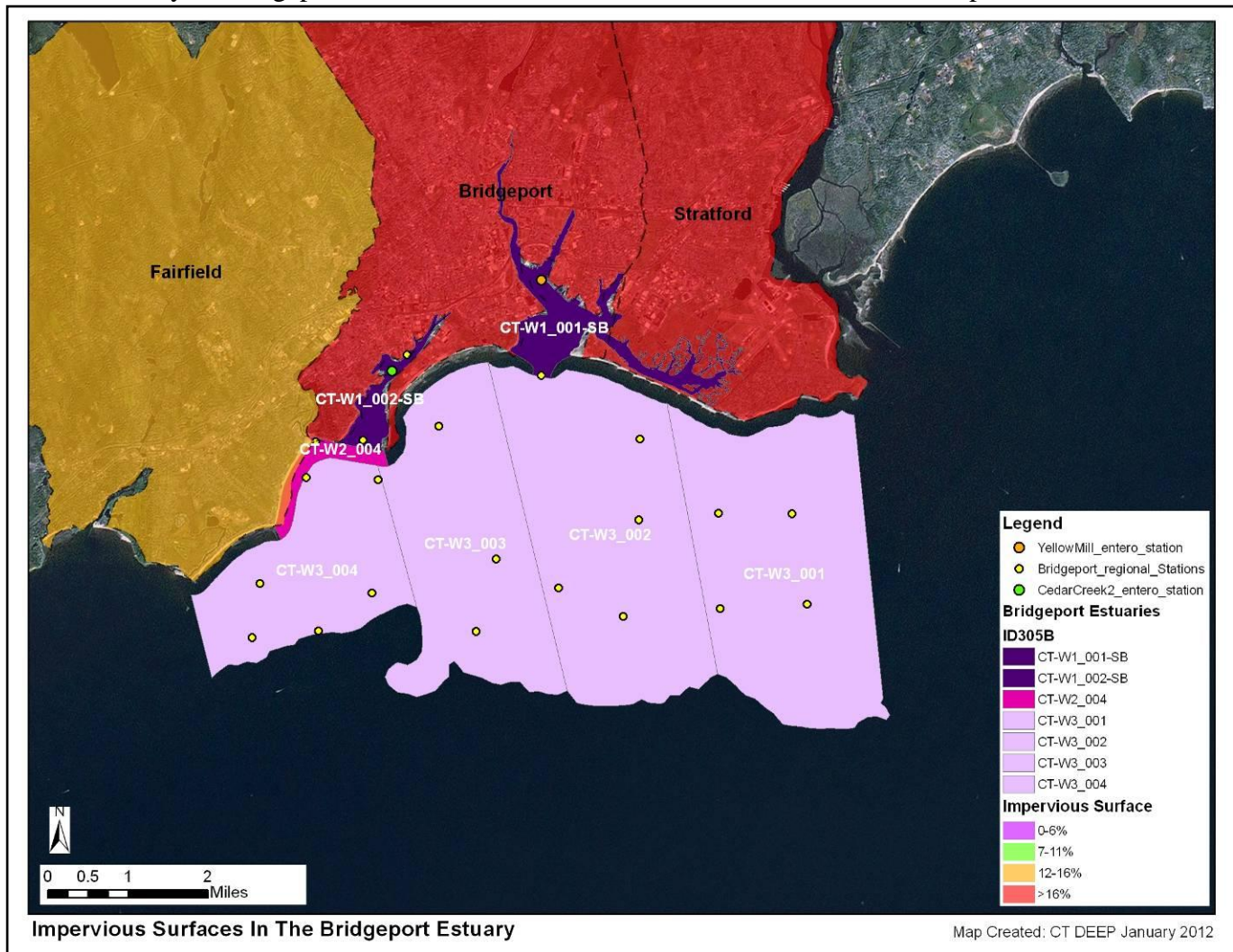
Combined Sewer Overflows (CSOs)

CSOs represent a likely source of bacterial contamination within the Bridgeport Estuary. Combined sewer systems carry water from both sanitary and storm sewers to publicly owned treatment works (POTW). Storm sewers collect large volumes of water during significant rain events. When this incoming volume of water surpasses the capacity of a POTW, the sewers overflow at designated CSOs to reduce the volume of water entering the facility. Overflowing combined sewers will deposit raw sewage with high levels of bacteria into the receiving water. As shown in Figure 4, there are multiple CSOs identified around Bridgeport and Black Rock Harbors in Bridgeport near the impaired segments. According to the 2005 Bridgeport Estuary Report, there are 148 CSO regulators and wet-weather flows can bypass through 71 outfall locations directly to the estuary. These CSOs may be contributing bacteria to the harbors and are a likely source of bacterial contamination to the impaired segments of the Bridgeport Estuary.

Stormwater Runoff from Developed Areas

The City of Bridgeport and the Towns of Fairfield and Stratford are heavily developed. Impervious surfaces, or surface areas such as roofs and roads that force water to run off land surfaces rather than infiltrate soil, often characterize developed areas. Studies have shown a link between the amount of impervious area in a watershed and water quality conditions (CWP, 2003). In one study, researchers correlated the amount of fecal coliform to the percentage of land with impervious cover in a watershed (Mallin *et al.*, 2000). According to the 2005 Bridgeport Estuary Report, Bridgeport is characterized by long sections of sandy beach with heavy urban development. Black Rock and Bridgeport Harbors are highly industrialized, and Bridgeport Harbor is the second largest commercial port in Connecticut with three petroleum ports and two shipping ports. Coastal land bordering the Bridgeport Estuary in Bridgeport and Stratford exceeds 16% impervious surfaces (Figure 6). Stations within Segments 2 (CT-W1_002-SB), 3 (CT-W2_004), and 7 (CT-W1_004) exceeded the WQS for fecal coliform during wet-weather, which indicates that stormwater runoff is likely contributing to the bacterial concentration in the Bridgeport Estuary.

Figure 6: Impervious cover (%) for Bridgeport, Fairfield, and Stratford, CT



Illicit Discharges and Insufficient Septic Systems

As shown in Figure 4, the majority of Bridgeport, Fairfield and Stratford rely on a municipal sanitary sewer system. Sewer system leaks and other illicit discharges can contribute bacteria to nearby surface waters. According to the 2005 Bridgeport Estuary Report, all of Bridgeport is connected to public sewers. Bridgeport has 10 pump stations with installed alarms for 24-hour flow monitoring, except Seaside pump station at Seaside Park, which only operates during the summer. Several sewage treatment plants have been identified in Figure 4.

Portions of the watershed, particularly in Fairfield and Stratford, also rely on onsite wastewater treatment systems, such as septic systems. Properly managed septic systems and leach fields have the ability to effectively remove bacteria from waste. If systems are not maintained, waste will not be adequately treated and may result in bacteria reaching nearby surface and ground water. As shown in Figure 4, there may be failing septic systems, septage lagoons, and large septic tank leach fields near the shoreline that could impact the estuary. Station 051-06.2 in Segment 3 (CT-W2_004) exceeded the WQS for fecal coliform during dry-weather, which indicates that sewage may be infiltrating groundwater and that failing septic systems may be contributing to the bacterial concentration in the Bridgeport Estuary. In Connecticut, local health directors or health districts are responsible for keeping track of any reported insufficient or failing septic systems in a specific municipality. The City of Bridgeport has a full-time

health director (<http://ci.bridgeport.ct.us/newdepartments/health/default.aspx>). The Town of Stratford has a full-time health director (<http://www.townofstratford.com/content/1302/402/615/default.aspx>). The Town of Fairfield has a full-time health director (<http://www.fairfieldct.org/health.htm>).

Wildlife and Domestic Animal Waste

Wildlife, including waterfowl, and domestic animals within the municipalities of Bridgeport, Fairfield, and Stratford, including those present in the estuary, represent another potential source of bacteria to the impaired waterbodies. Elevated bacteria levels due solely to a natural population of wildlife are not subject to the WQS. However, any exacerbation of wildlife population sizes or residency times influenced by human activities is subject to the CT WQS and TMDL provisions. Multiple locations of concentrated migratory waterfowl have been identified throughout the Bridgeport Estuary, including within Segment 1 (CT-W1_001-SB) along Lewis Gut and Segment 3 (CT-W2_004) near lower Ash Creek (Figure 4). According to the 2005 Bridgeport Estuary Report, large migrating waterfowl have been reported in Great Meadow Salt Marsh. With the construction of roads and drainage systems, wastes from these waterfowl may no longer be retained on the landscape, but instead may be conveyed via stormwater to the nearest surface waterbody. As such, physical land alterations can exacerbate the impact of these natural sources on water quality (USEPA, 2001).

Short Beach Golf Course, Country Club of Fairfield, and Pine Creek Par 3 Golf Course are located in Stratford and Fairfield near Segments 1 (CT-W1_001-SB), 4 (CT-W3_001), and 7 (CT-W3_004). Also located within the watershed near the impaired segments are large open areas, including Pine Creek Recreation Area, Seaside Park, and Marina Park. Geese and other waterfowl are known to congregate in open areas, including recreational fields, agricultural crop fields, and golf courses. In addition to creating a nuisance, large numbers of geese can create unsanitary conditions on the grassed areas and cause water quality problems due to bacterial contamination associated with their droppings. Large populations of geese can also lead to habitat destruction as a result of overgrazing on wetland and riparian plants.

As indicated previously, portions of Bridgeport, Stratford, and Fairfield near the estuary are heavily developed with commercial and residential properties. As such, waste from domestic animals, such as dogs, may also be contributing to bacteria concentrations in the Bridgeport Estuary.

Marinas

As noted previously, multiple marinas are located within the Bridgeport Estuary (Figure 4 and Table 5). Marinas are located at the water's edge, and if no measures are taken to reduce pollutants, including buffering, pollutants can be transported via runoff from parking lots and hull maintenance areas directly into the marina basin. Common pollutants from marinas include bacteria and nutrients from stormwater runoff, solid and liquid materials used in boat maintenance and cleaning, fuel and oil, sewage from public restrooms and boat pump-outs, fish waste, and turbidity from boating activities. The CT DEEP has information on regional pump-out boats and facilities at its website, http://www.ct.gov/dep/cwp/view.asp?a=2705&q=323708&depNav_GID=1711. There are several pump-out facilities in the Bridgeport region. The service is free and eliminates the possibility of vessels dumping raw wastes into Long Island Sound, which is prohibited by CT Water Quality Standards Number 24, "the discharge of sewage from any vessel to any water is prohibited."

Recreation

People coming in direct contact with surface water presents another potential source of bacterial contamination. Microbial source tracking (MST) surveys conducted in New Hampshire have shown

humans to be a source of bacterial contamination at beaches (Jones, 2008). Since there several beaches through the Bridgeport Estuary, it is probable that some bacterial contamination can be attributed to human activities at Pleasure Beach.

Additional Sources

Two water permits through the National Pollutant Discharge Elimination System (NPDES) program, which regulates the type and nature of discharges to waterbodies, were identified in Bridgeport in the 2005 Bridgeport Estuary Report, and a total of 5 were identified in Figure 4. The two NPDES permits are for PSEG Power and Bridgeport Energy, both of which had high fecal coliform (colonies/100 mL) results for their industrial discharge monitoring (Table 6). Multiple landfills were also identified in Figure 4, three of which are near the shoreline at Seaside Park in Bridgeport. The 2005 Bridgeport Estuary Report identified a capped landfill along Seaside Park at Black Rock Harbor that was reopened in 1998 for demolition material and recapped in 2000. All refuse is taken to the Resource Recovery Facility in Bridgeport.

There may be other sources not listed here or identified in Figure 4 that contribute to the observed water quality impairments in the Bridgeport Estuary. Further monitoring and investigation will confirm the listed sources and discover additional ones. More detailed evaluation of potential sources is expected to become available as activities are conducted to implement this TMDL.

CURRENT MANAGEMENT ACTIVITIES

The City of Bridgeport and the Towns of Fairfield and Stratford have developed and implemented programs to protect water quality from bacterial contamination. In addition, the National Shellfish Sanitation Program (NSSP) has multiple requirements for the protection and evaluation of shellfish growing areas. More information about this program is provided below and available online: <http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/Seafood/FederalStatePrograms/NationalShellfishSanitationProgram/ucm053724.htm>.

The NSSP requires the completion of a sanitary survey to determine acceptable and unacceptable growing areas, and to accurately classify a growing area as Approved, Conditionally Approved, Restricted, Conditionally Restricted, or Prohibited. A sanitary survey is an in-depth evaluation of all environmental factors impacting water quality in a shellfish growing area. Environmental factors include both actual and potential pollutant sources, whether natural or man-made, along with meteorological and hydrographic characteristics of the growing area. The principal components of a sanitary survey are: (1) identification and evaluation of pollutant sources, (2) evaluation of meteorological factors, (3) evaluation of hydrographic factors affecting the distribution of pollutants, and (4) assessment of water quality.

The sanitary survey includes data and results from the following:

1. Shoreline survey;
2. Survey of the bacteriological quality of the water;
3. Evaluation of meteorological, hydrodynamic, and geographic characteristics of the growing area;
4. Analysis of shoreline survey, bacteriological water quality, and meteorological, hydrodynamic, and geographic characteristics; and
5. Determination of the appropriate growing area classification.

Maintaining updated sanitary survey records consists primarily of routinely evaluating major pollutant sources, collecting water quality data from sampling stations under the selected NSSP water quality monitoring strategy, and analyzing the data to ensure that the classification continues to represent current sanitary conditions in the growing area. The entire sanitary survey process must be repeated every 12 years. In the interim, the sanitary quality of each growing area must be reviewed as often as necessary to ensure appropriate classification. Certain sanitary survey components are required by the Model Ordinance to be updated annually and triennially.

The growing area classification and supporting data from the sanitary survey shall be reviewed at least every three years. As required by NSSP, this triennial re-evaluation shall include:

1. A review of water quality sampling results;
2. Documentation of any new pollutant sources and evaluation of their impact on the growing area;
3. Re-evaluation of all pollutant sources, including sources previously identified in the sanitary survey, as necessary to fully evaluate any changes in the sanitary conditions of the growing area. Re-evaluation may or may not include a site visit;
4. A comprehensive report analyzing the sanitary survey data and determining whether the existing growing area classification is accurate or requires revision; and
5. Reclassification of the growing area if re-evaluation determines that conditions for classification have changed based on data collected during the triennial review.

NSSP also requires the sanitary survey be updated annually to reflect changes in conditions in the growing area. The annual re-evaluation shall include:

1. Field observation of pollutant sources during drive-through surveys, sample collections, or other information sources;
2. Addition and review of current year's water quality sampling results to a database collected in accordance with the bacteriological standards and sample collection required;
3. Review of available inspection reports and effluent samples collected from pollutant sources;
4. Review of available performance standards for various types of discharges impacting the growing area; and
5. A brief report documenting annual re-evaluation findings.

The most recent annual assessment for the shellfish growing waters in the City of Bridgeport was published in 2005 (Bridgeport, 2005). According to this report, no growing areas are candidates for re-classification. The report also notes remediation efforts initiated by the City of Bridgeport and WPCA. In 2005, the City of Bridgeport began a \$100 million project to upgrade its WPCFs, eliminate and monitor CSOs, and rehabilitate its sanitary sewer system (Bridgeport, 2005).

Other efforts have been taken by Bridgeport, Stratford, and Fairfield to reduce bacteria to its surface waters. As indicated previously, Bridgeport, Stratford, and Fairfield are regulated under the MS4 program. The MS4 General Permit is required for any municipality with urbanized areas that initiates, creates, originates or maintains any discharge of stormwater from a storm sewer system to waters of the State. The MS4 permit requires towns to design a Stormwater Management Plan (SMP) that reduces the discharge of stormwater pollutants to improve water quality. The plan must address the following six minimum measures:

1. Public Education and Outreach.
2. Public Involvement/Participation.
3. Illicit discharge detection and elimination.
4. Construction site stormwater runoff control.
5. Post-construction stormwater management in the new development and redevelopment.
6. Pollution prevention/good housekeeping for municipal operations.

Each municipality is also required to submit an annual update outlining steps taken to meet the six minimum measures. The most recent updates that address bacterial contamination in the watershed are summarized in Tables 9, 10, and 11.

Table 9: Summary of MS4 requirement updates related to the reduction of bacterial contamination from Bridgeport, CT (Permit # GSM000017)

Minimum Measure	Bridgeport Annual Report (2010)
Public Outreach and Education	1) Distributed MS4 information in WPCA's billing insert.
Public Involvement and Participation	1) Implemented catch basin program with public involvement/participation.
Illicit Discharge Detection and Elimination	1) Developed map of all storm outfalls greater than 12". 2) Created program to identify and remedy illicit discharges. 3) Developed ordinance banning illicit discharges.
Construction Site Stormwater Runoff Control	1) Developed land use regulations for MS4 compliance.

Table 9: Summary of MS4 requirement updates related to the reduction of bacterial contamination from Bridgeport, CT (Permit # GSM000017) (continued)

Minimum Measure	Bridgeport Annual Report (2010)
Post Construction Stormwater Management	1) Ongoing efforts for full implementation of MS4 requirements.
Pollution Prevention and Good Housekeeping	1) Developing training program for municipal employees. 2) Continuing to sweep all roadway surfaces. 3) Developed program to clean catch basin structures. 4) Developed program for sewers in need of inspection/repair/replacement.

Table 10: Summary of MS4 requirement updates related to the reduction of bacterial contamination from Stratford, CT (Permit # GSM000105)

Minimum Measure	Stratford Annual Report (2010)
Public Outreach and Education	1) Continuing to develop school educational program. 2) Received a grant for stormwater stenciling program to be completed by 2011. 3) Developed an educational brochure on stormwater permitting program and BMPs.
Public Involvement and Participation	1) Continuing to enlist volunteer groups to distribute brochures, perform stenciling, and promote clean-ups. 2) Developed Project Green Sweep program to clean up river.
Illicit Discharge Detection and Elimination	1) Continuing to develop map of storm sewer outfalls. 2) Continuing to develop an ordinance regulating stormwater discharges.
Construction Site Stormwater Runoff Control	1) Reviewed and updated land use regulations and E&S regulations. 2) Continuing to develop an inspection program for E&S control compliance.
Post Construction Stormwater Management	1) Continuing to develop new ordinance controlling water quality and quantity. 2) Continuing to develop a list of BMPs strategies.
Pollution Prevention and Good Housekeeping	1) Developing a training program for municipal employees. 2) Continued annual street sweeping program. 3) Developed program for stream and outfall cleaning, including catch basins.

Table 11: Summary of MS4 requirement updates related to the reduction of bacterial contamination from Fairfield, CT (Permit # GSM000012)

Minimum Measure	Fairfield Annual Report (2010)
Public Outreach and Education	1) Sponsored school Environmental Fair to educate students on stormwater quality. 2) Published a month-long series of articles related to groundwater, recharge, and water quality/runoff. 3) Installed collection containers and reviewed current ordinances for pet waste management. 4) Conducted annual collection of household hazardous waste and provided educational brochures on proper handling and disposal.
Public Involvement and Participation	1) Involved Boy Scouts in stenciling 52 storm drains. Over 500 drains have been stenciled and Sasco Brook watershed stenciling is complete. 2) Currently developing a stormwater ordinance to satisfy Phase 2 requirements and MS4 regulations. 3) Conducted annual beach and riverfront clean-ups. 4) Created a volunteer watershed organization to help identify outfalls, find illicit discharge, organize clean-ups, and stencil storm drains. 5) Created a Stormwater Phase 2 Advisory Committee. 6) Provided opportunities for stormwater quality volunteers to supply recycled pet waste bags, help the Shellfish Commission determine illicit discharges, and organize clean-ups.
Illicit Discharge Detection and Elimination	1) Currently developing a proposed illicit discharge ordinance. 2) Created brochures related to illicit discharges available in the Engineering office for public information. 3) Mapped 99% of all storm system outfalls with continued investigation of hidden or illegal connections. 4) Performed over 180 dry weather inspections for illicit discharges. All complaints or incidents recorded for review.
Construction Site Stormwater Runoff Control	1) Continued required inspection program, and conducted random inspections of construction sites to determine compliance.
Post Construction Stormwater Management	1) Developed and implemented post-construction BMP strategy for water quality improvement from impervious surfaces.
Pollution Prevention and Good Housekeeping	1) Developed a maintenance plan for cleaning catch basin sumps, swirl concentrators, and other drainage structures. 2) Increased sweeping in the Downtown and Town Hall Green areas.

RECOMMENDED NEXT STEPS

Bridgeport, Stratford, and Fairfield have developed and implemented programs to protect water quality from bacterial contamination. Future mitigative activities are necessary to ensure the long-term protection of Segments 1 – 7 in the Bridgeport Estuary and have been prioritized below.

1) Implement a plan to remove all CSOs in the Bridgeport Estuary watershed.

There are multiple CSOs located near Bridgeport and Black Rock Harbors and the impaired segments of the Bridgeport Estuary. As of 2005, a \$32 million project was underway to eliminate 40 CSOs, particularly along Ash Creek, Black Rock Harbor, Yellow Mill River, and Johnson Creek, and establish a monitoring program for the remaining CSOs. The Bridgeport Water Pollution Control Authority (WPCA) has also redesigned Evers Street pump station, added a de-chlorination facility at Bridgeport West Side WPCF, eliminated Island Brook pump station and rerouted flow to the new River Street pump station, and allocated \$1.5 million per year for sewer system rehabilitation.

Removal of CSOs is cost inhibitive, and no municipality has the resources to take on such a task on their own. To help implement these large scale projects, the State of Connecticut developed the Connecticut Clean Water Fund (CWF), which provides financial assistance to municipalities for the planning, design, and construction of wastewater collection and treatment projects. The CWF covers 20% of the project cost and provides a low interest loan for the remaining balance. However, the CWF also provides a special incentive for CSO correction or removal projects, covering 50% of the project cost in addition to the low interest loan (CTDEEP (CWF), 2011). It is important for the City of Bridgeport to continue supporting the efforts of the Bridgeport WPCA because removing the CSOs along the shoreline of Bridgeport and Black Rock Harbors will help reduce bacteria concentrations within the Bridgeport Estuary.

2) Continue monitoring of permitted sources.

There are 83 permitted sources in the Bridgeport Estuary, some of which have shown historically high bacteria concentrations. Further monitoring will provide information essential to better locate, understand, and reduce pollution sources. If any current monitoring is not done with appropriate bacterial indicator based on the receiving water, then a recommended change during the next permit reissuance is to include the appropriate indicator species. If facility monitoring indicates elevated bacteria, then implementation of permit is required, and any voluntary measures to identify and reduce sources of bacterial contamination at the facility are also recommended. Regular monitoring should be established for all permitted sources to ensure compliance with permit requirements and to determine if current requirements are adequate or if additional measures are necessary for water quality protection.

Section 6(k) of the MS4 General Permit requires a municipality to modify their Stormwater Management Plan to implement the TMDL within four months of TMDL approval by EPA if stormwater within the municipality contributes pollutant(s) in excess of the allocation established by the TMDL. For discharges to impaired waterbodies, the municipality must assess and modify the six minimum measures of its plan, if necessary, to meet TMDL standards. Particular focus should be placed on the following plan components: public education, illicit discharge detection and elimination, stormwater structures cleaning, and the repair, upgrade, or retrofit of storm sewer structures. The goal of these modifications is to

establish a program that improves water quality consistent with TMDL requirements. Modifications to the Stormwater Management Plan in response to TMDL development should be submitted to the Stormwater Program of DEEP for review and approval.

Tables 12 and 13 detail the appropriate bacteria criteria for use as waste load allocations established by this TMDL for use as water quality targets by permittees as permits are renewed and updated, within the Bridgeport Estuary.

For any municipality subject to an MS4 permit and affected by a TMDL, the permit requires a modification of the SMP to include BMPs that address the included impairment. In the case of bacteria related impairments municipal BMPs could include: implementation or improvement to existing nuisance wildlife programs, septic system monitoring programs, any additional measures that can be added to the required illicit discharge detection and elimination (IDDE) programs, and increased street sweeping above basic permit requirements. Any non-MS4 municipalities can implement these same types of initiatives in effort to reduce bacteria source loading to impaired waterways.

Any facilities that discharge non-MS4 regulated stormwater should update their Pollution Prevention Plan to reflect BMPs that can reduce bacteria loading to the receiving waterway. These BMPs could include nuisance wildlife control programs and any installations that increase surface infiltration to reduce overall stormwater volumes. Facilities that are regulated under the Commercial Activities Stormwater Permit should report any updates to their SMP in their summary documentation submitted to DEEP.

Table 12. Bacteria (Enterococci) TMDLs, WLAs, and LAs for Recreational Uses

Class	Bacteria Source	Instantaneous Enterococcus (#/100mL)				Geometric Mean Enterococcus (#/100mL)	
		WLA ⁶		LA ⁶		WLA ⁶	LA ⁶
	Recreational Use	1	2	1	3	All	All
SA ⁵	Illicit sewer connection	0	0			0	
	Leaking sewer lines	0	0			0	
	Stormwater (MS4s)	104 ⁷	500 ⁷			35 ⁷	
	Stormwater (non-MS4)			104 ⁷	500 ⁷		35 ⁷
	Wildlife direct discharge			104 ⁷	500 ⁷		35 ⁷
	Human or domestic animal direct discharge ³			104	500		35
SB ⁵	Non-Stormwater NPDES	104	500			35	
	CSOs	104	500			35	
	SSOs	0	0			0	
	OBDs ⁴	0	0			0	
	Illicit sewer connection	0	0			0	
	Leaking sewer lines	0	0			0	
	Stormwater (MS4s)	104 ⁷	500 ⁷			35 ⁷	
	Stormwater (non-MS4)			104 ⁷	500 ⁷		35 ⁷
	Wildlife direct discharge			104 ⁷	500 ⁷		35 ⁷

	Human or domestic animal direct discharge ³			104	500		35
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- (1) **Designated Swimming.** Procedures for monitoring and closure of bathing areas by State and Local Health Authorities are specified in: Guidelines for Monitoring Bathing Waters and Closure Protocol, adopted jointly by the Department of Environmental Protections and the Department of Public Health. May 1989. Revised April 2003 and updated December 2008.
- (2) **Non-Designated Swimming.** Includes areas otherwise suitable for swimming but which have not been designated by State or Local authorities as bathing areas, waters which support tubing, water skiing, or other recreational activities where full body contact is likely.
- (3) **All Other Recreational Uses.**
- (4) Criteria for the protection of recreational uses in Class B waters do not apply when disinfection of sewage treatment plant effluents is not required consistent with Standard 23. (Class B surface waters located north of Interstate Highway I-95 and downstream of a sewage treatment plant providing seasonal disinfection May 1 through October 1, as authorized by the Commissioner.)
- (5) Human direct discharge = swimmers
- (6) Unless otherwise required by statute or regulation, compliance with this TMDL will be based on ambient concentrations and not end-of-pipe bacteria concentrations
- (7) Replace numeric value with "natural levels" if only source is naturally occurring wildlife. Natural is defined as the biological, chemical and physical conditions and communities that occur within the environment which are unaffected or minimally affected by human influences (CT DEEP 2011a). Sections 2.2.2 and 6.2.7 of this Core Document deal with BMPs and delineating type of wildlife inputs.

Table 13: Bacteria (Fecal Coliform) TMDLs WLAs, and LAs for Shellfish Harvesting Areas.

		Geometric Mean Fecal coliform (#/100mL) ⁴		90% samples less than Fecal Coliform (#/100mL) ⁴	
Class	Bacteria Source ¹	WLA ⁵	LA ⁵	WLA ⁵	LA ⁵
SA Direct Consumption	CSOs	14		31	
	SSOs	0		0	
	OBDs ³	0		0	
	Illicit sewer connection	0		0	
	Leaking sewer lines	0		0	
	Stormwater (MS4s)	14 ⁶		31 ⁶	
	Stormwater (non-MS4)		14 ⁶		31 ⁶
	Wildlife direct discharge		14 ⁶		31 ⁶
	Human or domestic animal direct discharge ²		14		31
SB Indirect Consumption	Non-Stormwater NPDES	88		260	
	CSOs	88		260	
	SSOs	0		0	
	OBDs ³	0		0	
	Illicit sewer connection	0		0	
	Leaking sewer lines	0		0	
	Stormwater (MS4s)	88 ⁶		260 ⁶	
	Stormwater (non-MS4)		88 ⁶		260 ⁶
	Wildlife direct discharge		88 ⁶		260 ⁶
	Human or domestic animal direct discharge ²		88		260

- (1) Criteria are based on utilizing the mTec method as specified in the U.S. Food and Drug Administration National Shellfish Sanitation Program-Model Ordinance (NSSP-MO) document *Guide for the Control of Molluscan Shellfish 2007*.
- (2) Human direct discharge = swimmers

- (3) All coastal and inland waters in Connecticut are designated as No Discharge Areas for Overboard Discharges (OBDs) from marine vessels with Marine Sanitation Devices.
- (4) Adverse Condition Allocations apply to areas affected by Point Sources. Adverse Condition or Random Sampling Allocations apply to areas affected by Nonpoint Sources. Adverse condition is defined as "... a State or situation caused by meteorological, hydrological or seasonal events or point source discharges that has historically resulted in elevated [bacteria] levels in the particular growing area." USFDA 2005
- (5) Unless otherwise required by statute or regulation, compliance with this TMDL will be based on ambient concentrations and not end-of-pipe bacteria concentrations
- (6) Replace numeric value with "natural levels" if only source is naturally occurring wildlife. Natural is defined as the biological, chemical and physical conditions and communities that occur within the environment which are unaffected or minimally affected by human influences (CT DEEP 2011a). Sections 2.2.2 and 6.2.7 of this Core Document deal with BMPs and delineating type of wildlife inputs

3) Identify areas in Bridgeport, Fairfield, and Stratford to implement Best Management Practices (BMPs) to control stormwater runoff.

As noted previously, Bridgeport and Stratford near the Bridgeport Estuary have impervious cover greater than 16% and are urban areas regulated under the MS4 program. As such, stormwater runoff is likely contributing bacteria to the Bridgeport Estuary. To identify areas that are contributing bacteria to the impaired segments, municipalities should conduct wet-weather sampling at stormwater outfalls that discharge directly to the impaired segments in the Bridgeport Estuary. To treat stormwater runoff, the towns should identify areas along the developed sections of the impaired segments to install BMPs designed to encourage stormwater to infiltrate the ground before entering the waterbodies. These BMPs would disconnect impervious areas and reduce pollutant loads to the estuary. More detailed information and BMP recommendations can be found in the core TMDL document.

4) Implement a program to evaluate the sanitary sewer system.

Most of Bridgeport, Stratford, and Fairfield near the estuary rely on a municipal sewer system (Figure 4). It is important for Bridgeport, Stratford, and Fairfield to develop a program to evaluate its sanitary sewer system and reduce leaks and overflows. This program should include periodic inspections of the sewer line.

5) Develop a system to monitor septic systems.

Although the majority of residents near the Bridgeport Estuary rely on a municipal sanitary sewer system, some rely on septic systems, particularly in Fairfield and Stratford. If not already in place, Fairfield and Stratford should establish a program to ensure that existing septic systems are properly operated and maintained. For instance, communities can create an inventory of existing septic systems through mandatory inspections. Inspections help encourage proper maintenance and identify failed and sub-standard systems. Policies that govern the eventual replacement of the sub-standard systems within a reasonable timeframe could be adopted. Municipalities can also develop programs to assist citizens with the replacement and repair of older and failing systems.

6) Evaluate municipal education and outreach programs regarding animal waste.

Any education and outreach program should highlight the importance of not feeding waterfowl and wildlife and managing waste from horses, dogs, and other pets. Municipalities and residents can take measures to minimize waterfowl-related impacts by allowing tall, coarse vegetation to grow in riparian areas of impaired segments frequented by waterfowl. Waterfowl, especially grazers like geese, prefer easy access to water. Maintaining an uncut vegetated buffer along the shore will make the habitat less desirable to geese and encourage migration. In addition, any educational program should emphasize that

feeding waterfowl, such as ducks, geese, and swans, may contribute to water quality impairments in the Bridgeport Estuary and can harm human health and the environment. Animal wastes should be disposed of away from any waterbody or storm drain system. BMPs effective at reducing the impact of animal waste on water quality include installing signage, providing pet waste receptacles in high-use areas, enacting ordinances requiring the clean-up of pet waste, and targeting educational and outreach programs in problem areas.

7) Improve education and outreach programs regarding boats and marinas.

Marinas must comply with permit requirements that limit bacteria contribution to the Bridgeport Estuary. Other programs, such as Connecticut's Clean Marina Program, may also be adopted by all marinas in the estuary to reduce bacteria contribution from non-point source pollution from marinas (http://www.ct.gov/dep/cwp/view.asp?a=2705&q=323530&depNav_GID=1635). The Clean Marina Program is a voluntary program that encourages inland and coastal marina operators to minimize pollution, and recognizes Connecticut marinas, boatyards, and yacht clubs that go above and beyond regulatory compliance as "Certified Clean Marinas." All certified marinas receive a weatherproof Clean Marina Flag to fly at their facility and authorization to use the Clean Marina Program logo on company publications. CT DEEP recognizes certified Clean Marinas through press releases, on its web page, and at public events. As a companion to the Clean Marina Program, the Clean Boater Program encourages boaters to use clean boating techniques when operating and maintaining their boats.

BACTERIA DATA AND PERCENT REDUCTIONS TO MEET THE TMDL**Table 14: Segment 1: LIS WB Inner – Bridgeport Harbor Bacteria Data****Waterbody ID:** CT-W1_001-SB**Characteristics:** Saltwater, Class SB, Commercial Shellfishing Harvesting, Recreation, Habitat for Marine Fish and other Aquatic Life and Wildlife, Industrial Water Supply, and Navigation**Impairment:** Shellfish Harvesting (*fecal coliform bacteria*)**Water Quality Criteria for fecal coliform:**

Geometric Mean: 88 colonies/100 mL
 90% of samples less than: 260 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: N/A
 90% of samples less than: 40%

Data: 2000 – 2010 from CT DEEP targeted sampling efforts, 2012 TMDL Cycle**Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 1: LIS WB Inner – Bridgeport Harbor (CT-W1_001-SB) with annual geometric means and reduction goals for samples**

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-03.3	breakwaters Bridgeport Harbor	4/24/2000	51	wet	26	N/A
015-03.3	breakwaters Bridgeport Harbor	5/16/2000	2	dry		
015-03.3	breakwaters Bridgeport Harbor	6/8/2000	51	wet		
015-03.3	breakwaters Bridgeport Harbor	6/19/2000	50	wet		
015-03.3	breakwaters Bridgeport Harbor	8/15/2000	51	wet		
015-03.3	breakwaters Bridgeport Harbor	4/3/2001	51	wet	35	N/A
015-03.3	breakwaters Bridgeport Harbor	5/30/2001	22	dry		
015-03.3	breakwaters Bridgeport Harbor	6/18/2001	51	wet		
015-03.3	breakwaters Bridgeport Harbor	8/13/2001	51	wet		
015-03.3	breakwaters Bridgeport Harbor	9/17/2001	18	dry		
015-03.3	breakwaters Bridgeport Harbor	5/20/2002	6	wet	6	N/A
015-03.3	breakwaters Bridgeport Harbor	6/10/2002	22	dry		
015-03.3	breakwaters Bridgeport Harbor	6/18/2002	11	dry		
015-03.3	breakwaters Bridgeport Harbor	10/1/2002	2	dry		
015-03.3	breakwaters Bridgeport Harbor	10/28/2002	4	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 1: LIS WB Inner – Bridgeport Harbor (CT-W1_001-SB) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-03.3	breakwaters Bridgeport Harbor	4/28/2003	2	wet	16	N/A
015-03.3	breakwaters Bridgeport Harbor	6/9/2003	50	wet		
015-03.3	breakwaters Bridgeport Harbor	6/17/2003	28	dry		
015-03.3	breakwaters Bridgeport Harbor	8/5/2003	51	wet		
015-03.3	breakwaters Bridgeport Harbor	8/11/2003	51	wet		
015-03.3	breakwaters Bridgeport Harbor	8/20/2003	2	dry		
015-03.3	breakwaters Bridgeport Harbor	9/30/2003	28	wet		
015-03.3	breakwaters Bridgeport Harbor	4/27/2004	51	wet	37	N/A
015-03.3	breakwaters Bridgeport Harbor	7/15/2004	14	wet		
015-03.3	breakwaters Bridgeport Harbor	8/6/2004	51	wet		
015-03.3	breakwaters Bridgeport Harbor	9/21/2004	51	wet		
015-03.3	breakwaters Bridgeport Harbor	3/30/2005	70	wet	15	N/A
015-03.3	breakwaters Bridgeport Harbor	4/5/2005	8	wet		
015-03.3	breakwaters Bridgeport Harbor	7/19/2005	5	wet		
015-03.3	breakwaters Bridgeport Harbor	12/28/2005	16	wet		
015-03.3	breakwaters Bridgeport Harbor	1/4/2006	20	wet	29	N/A
015-03.3	breakwaters Bridgeport Harbor	1/24/2006	20	wet		
015-03.3	breakwaters Bridgeport Harbor	6/8/2006	81	wet		
015-03.3	breakwaters Bridgeport Harbor	8/1/2006	8	dry		
015-03.3	breakwaters Bridgeport Harbor	10/31/2006	81	dry		
015-03.3	breakwaters Bridgeport Harbor	5/17/2007	171	wet	51* (N/A)	N/A
015-03.3	breakwaters Bridgeport Harbor	8/23/2007	68	wet		
015-03.3	breakwaters Bridgeport Harbor	9/13/2007	60	wet		
015-03.3	breakwaters Bridgeport Harbor	10/29/2007	81	wet		
015-03.3	breakwaters Bridgeport Harbor	12/5/2007	6	wet		
015-03.3	breakwaters Bridgeport Harbor	2/4/2008	14	dry	15	N/A
015-03.3	breakwaters Bridgeport Harbor	4/30/2008	50	wet		
015-03.3	breakwaters Bridgeport Harbor	6/10/2008	1	wet		
015-03.3	breakwaters Bridgeport Harbor	7/29/2008	10	wet		
015-03.3	breakwaters Bridgeport Harbor	12/15/2008	120	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 1: LIS WB Inner – Bridgeport Harbor (CT-W1_001-SB) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-03.3	breakwaters Bridgeport Harbor	4/14/2009	1	dry	8	N/A
015-03.3	breakwaters Bridgeport Harbor	6/11/2009	52	wet		
015-03.3	breakwaters Bridgeport Harbor	8/4/2009	4	dry		
015-03.3	breakwaters Bridgeport Harbor	9/2/2009	6	dry		
015-03.3	breakwaters Bridgeport Harbor	9/14/2009	20	wet		
015-03.3	breakwaters Bridgeport Harbor	4/27/2010	96	wet	28	40
015-03.3	breakwaters Bridgeport Harbor	5/5/2010	2	wet		
015-03.3	breakwaters Bridgeport Harbor	6/9/2010	15	dry		
015-03.3	breakwaters Bridgeport Harbor	7/15/2010	380	wet		
015-03.3	breakwaters Bridgeport Harbor	10/19/2010	1	dry		
015-03.3	breakwaters Bridgeport Harbor	11/18/2010	410	wet		
Shaded cells indicate an exceedance of water quality criteria						
†Average of two duplicate samples						
** Weather conditions for selected data taken from Hartford because local station had missing data						
*Indicates geometric mean and 90% less than values used to calculate the percent reduction						

Wet and dry weather fecal coliform (colonies/100 mL) geometric mean values for all monitoring stations on Segment 1: LIS WB Inner – Bridgeport Harbor (CT-W1_001-SB)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
015-03.3	breakwaters Bridgeport Harbor	2000-2010	40	16	20	30	7
Shaded cells indicate an exceedance of water quality criteria							

Table 15: Segment 2: LIS WB Inner – Black Rock Harbor Bacteria Data**Waterbody ID:** CT-W1_002-SB**Characteristics:** Saltwater, Class SB, Commercial Shellfishing Harvesting, Recreation, Habitat for Marine Fish and other Aquatic Life and Wildlife, Industrial Water Supply, and Navigation**Impairment:** Recreation (*enterococci bacteria*) and Shellfish Harvesting (*fecal coliform bacteria*)**Water Quality Criteria for enterococci:**

Geometric Mean: 35 colonies/100 mL
 Single Sample: 500 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **97%**
 Single Sample: **NA**

Water Quality Criteria for fecal coliform:

Geometric Mean: 88 colonies/100 mL
 90% of samples less than: 260 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **NA**
 90% of samples less than: **10%**

Data: 2000 – 2010 from CT DEEP targeted sampling efforts, 2012 TMDL Cycle**Single sample enterococci data (colonies/100 mL) from all monitoring stations on Segment 2: LIS WB Inner – Black Rock Harbor (CT-W1_002-SB) with annual geometric means calculated**

Station Name	Sample Location	Date	Result	Wet/Dry	Geo Mean
Cedar Creek 2	Cedar Creek	8/13/2009	10	dry	37* (NA)
Cedar Creek 2	Cedar Creek	8/18/2009	10	dry	
Cedar Creek 2	Cedar Creek	8/20/2009	10	dry	
Cedar Creek 2	Cedar Creek	8/28/2009	10	wet	
Cedar Creek 2	Cedar Creek	8/29/2009	87 [†]	wet	
Cedar Creek 2	Cedar Creek	9/10/2009	10	dry	
Cedar Creek 2	Cedar Creek	9/11/2009	70 [†]	wet	
Cedar Creek 2	Cedar Creek	9/12/2009	10 [†]	wet	
Cedar Creek 2	Cedar Creek	9/13/2009	10	dry	
Cedar Creek 2	Cedar Creek	10/15/2009	10	wet	
Cedar Creek 2	Cedar Creek	10/28/2009	997 [†]	wet	

Station Name	Sample Location	Date	Result	Wet/Dry	Geo Mean
Cedar Creek 2	Cedar Creek	10/29/2009	1340* [†] (97%)	wet	
Cedar Creek 2	Cedar Creek	10/30/2009	295 [†]	dry	
Shaded cells indicate an exceedance of water quality criteria					
†Average of two duplicate samples					
** Weather conditions for selected data taken from Hartford because local station had missing data					
*Indicates geometric mean and 90% less than values used to calculate the percent reduction					

Wet and dry weather enterococci (colonies/100 mL) geometric mean values for all monitoring stations on Segment 2: LIS WB Inner – Black Rock Harbor (CT-W1_002-SB)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
Cedar Creek 2	Cedar Creek	2009	7	6	37	70	18
Shaded cells indicate an exceedance of water quality criteria							

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 2: LIS WB Inner – Black Rock Harbor (CT-W1_002-SB) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-02.2	N"8" Black Rock Harbor entrance	4/24/2000	2	wet	19	N/A
015-02.2	N"8" Black Rock Harbor entrance	5/16/2000	6	dry		
015-02.2	N"8" Black Rock Harbor entrance	6/8/2000	51	wet		
015-02.2	N"8" Black Rock Harbor entrance	6/19/2000	50	wet		
015-02.2	N"8" Black Rock Harbor entrance	7/17/2000	51	wet		
015-02.2	N"8" Black Rock Harbor entrance	8/15/2000	36	wet		
015-02.2	N"8" Black Rock Harbor entrance	4/3/2001	2	wet	11	N/A
015-02.2	N"8" Black Rock Harbor entrance	5/30/2001	51	dry		
015-02.2	N"8" Black Rock Harbor entrance	6/18/2001	51	wet		
015-02.2	N"8" Black Rock Harbor entrance	8/13/2001	22	wet		
015-02.2	N"8" Black Rock Harbor entrance	9/17/2001	2	dry		
015-02.2	N"8" Black Rock Harbor entrance	5/20/2002	2	wet	12	N/A
015-02.2	N"8" Black Rock Harbor entrance	6/10/2002	4	dry		
015-02.2	N"8" Black Rock Harbor entrance	6/18/2002	51	dry		
015-02.2	N"8" Black Rock Harbor entrance	10/1/2002	51	dry		
015-02.2	N"8" Black Rock Harbor entrance	10/28/2002	14	wet		
015-02.2	N"8" Black Rock Harbor entrance	4/28/2003	2	wet	19	N/A
015-02.2	N"8" Black Rock Harbor entrance	6/9/2003	51	wet		
015-02.2	N"8" Black Rock Harbor entrance	6/17/2003	50	dry		
015-02.2	N"8" Black Rock Harbor entrance	8/5/2003	51	wet		
015-02.2	N"8" Black Rock Harbor entrance	8/11/2003	36	wet		
015-02.2	N"8" Black Rock Harbor entrance	8/20/2003	4	dry		
015-02.2	N"8" Black Rock Harbor entrance	9/30/2003	28	wet		
015-02.2	N"8" Black Rock Harbor entrance	4/27/2004	51	wet	47* (NA)	N/A
015-02.2	N"8" Black Rock Harbor entrance	7/15/2004	36	wet		
015-02.2	N"8" Black Rock Harbor entrance	8/6/2004	51	wet		
015-02.2	N"8" Black Rock Harbor entrance	9/21/2004	50	wet		
015-02.2	N"8" Black Rock Harbor entrance	3/30/2005	23	wet	13	N/A
015-02.2	N"8" Black Rock Harbor entrance	4/5/2005	1	wet		
015-02.2	N"8" Black Rock Harbor entrance	7/19/2005	37	wet		
015-02.2	N"8" Black Rock Harbor entrance	12/28/2005	36	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 2: LIS WB Inner – Black Rock Harbor (CT-W1_002-SB) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-02.2	N"8" Black Rock Harbor entrance	1/4/2006	170	wet	19	N/A
015-02.2	N"8" Black Rock Harbor entrance	1/24/2006	10	wet		
015-02.2	N"8" Black Rock Harbor entrance	8/1/2006	8	dry		
015-02.2	N"8" Black Rock Harbor entrance	10/31/2006	10	dry		
015-02.2	N"8" Black Rock Harbor entrance	5/17/2007	810	wet	43	10
015-02.2	N"8" Black Rock Harbor entrance	8/23/2007	12	wet		
015-02.2	N"8" Black Rock Harbor entrance	9/13/2007	10	wet		
015-02.2	N"8" Black Rock Harbor entrance	10/29/2007	81	wet		
015-02.2	N"8" Black Rock Harbor entrance	12/5/2007	18	wet		
015-02.2	N"8" Black Rock Harbor entrance	2/4/2008	16	dry	27	N/A
015-02.2	N"8" Black Rock Harbor entrance	4/30/2008	20	wet		
015-02.2	N"8" Black Rock Harbor entrance	6/10/2008	9	wet		
015-02.2	N"8" Black Rock Harbor entrance	7/29/2008	50	wet		
015-02.2	N"8" Black Rock Harbor entrance	12/15/2008	100	wet		
015-02.2	N"8" Black Rock Harbor entrance	4/14/2009	9	dry	9	N/A
015-02.2	N"8" Black Rock Harbor entrance	6/11/2009	10	wet		
015-02.2	N"8" Black Rock Harbor entrance	8/4/2009	9	dry		
015-02.2	N"8" Black Rock Harbor entrance	9/2/2009	10	dry		
015-02.2	N"8" Black Rock Harbor entrance	9/14/2009	6	wet		
015-02.2	N"8" Black Rock Harbor entrance	4/27/2010	30	wet	16	7
015-02.2	N"8" Black Rock Harbor entrance	5/5/2010	10	wet		
015-02.2	N"8" Black Rock Harbor entrance	6/9/2010	1	dry		
015-02.2	N"8" Black Rock Harbor entrance	7/15/2010	500	wet		
015-02.2	N"8" Black Rock Harbor entrance	10/19/2010	1	dry		
015-02.2	N"8" Black Rock Harbor entrance	11/18/2010	100	wet		

Shaded cells indicate an exceedance of water quality criteria

† Average of two duplicate samples

** Weather conditions for selected data taken from Hartford because local station had missing data

*Indicates geometric mean and 90% less than values used to calculate the percent reduction

Wet and dry weather fecal coliform (colonies/100 mL) geometric mean values for all monitoring stations on Segment 2: LIS WB Inner – Black Rock Harbor (CT-W1_002-SB)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
015-02.2	N"8" Black Rock Harbor entrance	2000-2010	40	16	18	25	9
Shaded cells indicate an exceedance of water quality criteria							

Table 16: Segment 3: LIS WB Shore – Outer Bridgeport Harbor Bacteria Data**Waterbody ID:** CT-W2_004

Characteristics: Saltwater, Class SA, Shellfishing Harvesting for Direct Human Consumption, Recreation, Habitat for Marine Fish and other Aquatic Life and Wildlife, Industrial Water Supply, and Navigation

Impairment: Shellfish harvesting (*fecal coliform bacteria*)

Water Quality Criteria for fecal coliform:

Geometric Mean: 14 colonies/100 mL
 90% of samples less than: 31 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: 89%
 90% of samples less than: 90%

Data: 2000 - 2011 from CT DEEP targeted sampling efforts, 2012 TMDL Cycle

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 3: LIS WB Shore – Outer Bridgeport Harbor (CT-W2_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
051-06.2	mouth Ash Creek	4/24/2000	36	wet	38	73
051-06.2	mouth Ash Creek	5/16/2000	22	dry		
051-06.2	mouth Ash Creek	6/8/2000	51	wet		
051-06.2	mouth Ash Creek	7/17/2000	51	wet		
051-06.2	mouth Ash Creek	8/15/2000	36	wet		
051-06.2	mouth Ash Creek	4/3/2001	28	dry	26	57
051-06.2	mouth Ash Creek	5/30/2001	51	dry		
051-06.2	mouth Ash Creek	6/18/2001	51	wet		
051-06.2	mouth Ash Creek	8/13/2001	51	wet		
051-06.2	mouth Ash Creek	8/16/2001	2	dry		
051-06.2	mouth Ash Creek	9/17/2001	51	dry		
051-06.2	mouth Ash Creek	5/20/2002	51	wet	18	50
051-06.2	mouth Ash Creek	6/10/2002	4	wet		
051-06.2	mouth Ash Creek	6/18/2002	51	dry		
051-06.2	mouth Ash Creek	10/1/2002	50	dry		
051-06.2	mouth Ash Creek	10/28/2002	4	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 3: LIS WB Shore – Outer Bridgeport Harbor (CT-W2_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
051-06.2	mouth Ash Creek	4/28/2003	2	wet	29	73
051-06.2	mouth Ash Creek	6/9/2003	52	wet		
051-06.2	mouth Ash Creek	8/5/2003	52	wet		
051-06.2	mouth Ash Creek	8/11/2003	52	wet		
051-06.2	mouth Ash Creek	8/20/2003	52	dry		
051-06.2	mouth Ash Creek	9/30/2003	52	wet		
051-06.2	mouth Ash Creek	4/27/2004	51	wet	51	90
051-06.2	mouth Ash Creek	7/15/2004	50	wet		
051-06.2	mouth Ash Creek	8/6/2004	51	wet		
051-06.2	mouth Ash Creek	9/21/2004	51	wet		
051-06.2	mouth Ash Creek	3/30/2005	81	wet	13	40
051-06.2	mouth Ash Creek	4/5/2005	1	wet		
051-06.2	mouth Ash Creek	8/15/2005	81	wet		
051-06.2	mouth Ash Creek	12/28/2005	4	wet		
051-06.2	mouth Ash Creek	1/4/2006	52	wet	65	90
051-06.2	mouth Ash Creek	10/31/2006	81	wet		
051-06.2	mouth Ash Creek	5/17/2007	81	wet	32	73
051-06.2	mouth Ash Creek	5/21/2007	1	dry		
051-06.2	mouth Ash Creek	8/9/2007	81	wet		
051-06.2	mouth Ash Creek	8/23/2007	76	wet		
051-06.2	mouth Ash Creek	9/13/2007	72	wet		
051-06.2	mouth Ash Creek	2/4/2008	171	wet	115	73
051-06.2	mouth Ash Creek	4/30/2008	40	wet		
051-06.2	mouth Ash Creek	6/23/2008	810	dry		
051-06.2	mouth Ash Creek	7/29/2008	30	dry		
051-06.2	mouth Ash Creek	8/12/2008	70	dry		
051-06.2	mouth Ash Creek	9/4/2008	200	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 3: LIS WB Shore – Outer Bridgeport Harbor (CT-W2_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
051-06.2	mouth Ash Creek	4/14/2009	12	wet	35	33
051-06.2	mouth Ash Creek	7/27/2009	171	dry		
051-06.2	mouth Ash Creek	8/4/2009	30	wet		
051-06.2	mouth Ash Creek	8/25/2009	150	dry		
051-06.2	mouth Ash Creek	9/2/2009	16	dry		
051-06.2	mouth Ash Creek	9/14/2009	41	wet		
051-06.2	mouth Ash Creek	10/1/2009	10	dry		
051-06.2	mouth Ash Creek	4/27/2010	14	wet	126* (89%)	30
051-06.2	mouth Ash Creek	8/16/2010	6700	wet		
051-06.2	mouth Ash Creek	10/19/2010	10	dry		
051-06.2	mouth Ash Creek	11/18/2010	600	wet		
051-06.2	mouth Ash Creek	12/15/2010	56	wet		
051-06.2	mouth Ash Creek	4/14/2011	91	wet	43	57
051-06.2	mouth Ash Creek	6/15/2011	43	dry		
051-06.2	mouth Ash Creek	6/27/2011	21	wet		
Shaded cells indicate an exceedance of water quality criteria						
†Average of two duplicate samples						
** Weather conditions for selected data taken from Hartford because local station had missing data						
*Indicates geometric mean and 90% Samples values used to calculate the percent reduction						

Wet and dry weather fecal coliform (colonies/100 mL) geometric mean values for all monitoring stations on Segment 3: LIS WB Shore – Outer Bridgeport Harbor (CT-W2_004)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
051-06.2	mouth Ash Creek	2000-2011	40	18	39	43	32
Shaded cells indicate an exceedance of water quality criteria							

Table 17: Segment 4: LIS WB Midshore – Lordship Bacteria Data**Waterbody ID:** CT-W3_001

Characteristics: Saltwater, Class SA, Shellfishing Harvesting for Direct Human Consumption, Recreation, Habitat for Marine Fish and other Aquatic Life and Wildlife, Industrial Water Supply, and Navigation

Impairment: Shellfish Harvesting (*fecal coliform bacteria*)

Water Quality Criteria for fecal coliform:

Geometric Mean: 14 colonies/100 mL
 90% of samples less than: 31 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **18%**
 90% of samples less than: **50%**

Data: 2000 – 2011 from CT DEEP targeted sampling efforts, 2012 TMDL Cycle

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 4: LIS WB Midshore – Lordship (CT-W3_001) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-02.0	R"18"	4/24/2000	6	wet	9	7
138-02.0	R"18"	5/16/2000	4	dry		
138-02.0	R"18"	6/8/2000	28	wet		
138-02.0	R"18"	6/19/2000	4	wet		
138-02.0	R"18"	7/17/2000	36	wet		
138-02.0	R"18"	8/15/2000	8	wet		
138-02.0	R"18"	4/3/2001	2	wet	5	10
138-02.0	R"18"	6/5/2001	2	dry		
138-02.0	R"18"	6/18/2001	51	wet		
138-02.0	R"18"	8/13/2001	2	wet		
138-02.0	R"18"	9/17/2001	8	dry		
138-02.0	R"18"	5/20/2002	2	wet	2	N/A
138-02.0	R"18"	6/10/2002	2	dry		
138-02.0	R"18"	6/18/2002	2	dry		
138-02.0	R"18"	10/1/2002	2	dry		
138-02.0	R"18"	10/28/2002	2	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 4: LIS WB Midshore – Lordship (CT-W3_001) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-02.0	R"18"	4/28/2003	2	wet	5	N/A
138-02.0	R"18"	6/9/2003	11	wet		
138-02.0	R"18"	8/5/2003	11	wet		
138-02.0	R"18"	8/11/2003	14	wet		
138-02.0	R"18"	8/20/2003	2	dry		
138-02.0	R"18"	4/27/2004	2	wet	7	N/A
138-02.0	R"18"	7/15/2004	8	wet		
138-02.0	R"18"	8/6/2004	8	wet		
138-02.0	R"18"	9/21/2004	22	wet		
138-02.0	R"18"	3/30/2005	15	wet	2	N/A
138-02.0	R"18"	4/5/2005	1	wet		
138-02.0	R"18"	5/31/2005	1	wet		
138-02.0	R"18"	1/4/2006	4	wet	2	N/A
138-02.0	R"18"	1/24/2006	1	wet		
138-02.0	R"18"	4/6/2006	1	wet		
138-02.0	R"18"	6/8/2006	4	wet		
138-02.0	R"18"	7/31/2006	1	wet		
138-02.0	R"18"	6/6/2007	10	wet	5	7
138-02.0	R"18"	7/24/2007	1	wet		
138-02.0	R"18"	8/9/2007	1	wet		
138-02.0	R"18"	9/12/2007	32	wet		
138-02.0	R"18"	10/29/2007	8	wet		
138-02.0	R"18"	12/5/2007	4	wet		
138-02.0	R"18"	3/13/2008	2	dry	5	7
138-02.0	R"18"	6/10/2008	10	wet		
138-02.0	R"18"	7/29/2008	14	wet		
138-02.0	R"18"	8/12/2008	1	dry		
138-02.0	R"18"	9/11/2008	1	wet		
138-02.0	R"18"	12/15/2008	47	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 4: LIS WB Midshore – Lordship (CT-W3_001) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-02.0	R "18"	4/1/2009	1	dry	2	N/A
138-02.0	R "18"	4/14/2009	1	dry		
138-02.0	R "18"	5/12/2009	1	dry		
138-02.0	R "18"	6/16/2009	1	dry		
138-02.0	R "18"	7/28/2009	8	dry		
138-02.0	R "18"	8/4/2009	1	dry		
138-02.0	R "18"	9/2/2009	1	dry		
138-02.0	R "18"	12/8/2009	1	wet		
138-02.0	R "18"	12/15/2009	2	wet		
138-02.0	R "18"	12/28/2009	30	wet		
138-02.0	R "18"	4/27/2010	1	wet	1	N/A
138-02.0	R "18"	6/9/2010	1	dry		
138-02.0	R "18"	9/21/2010	1	dry		
138-02.0	R "18"	10/19/2010	1	dry		
138-02.0	R "18"	3/14/2011	22	dry	6	N/A
138-02.0	R "18"	5/25/2011	25	wet		
138-02.0	R "18"	6/22/2011	1	wet		
138-02.0	R "18"	6/27/2011	3	dry		
138-02.1	W. N"20"	4/24/2000	11	wet	11	7
138-02.1	W. N"20"	5/16/2000	4	dry		
138-02.1	W. N"20"	6/8/2000	51	wet		
138-02.1	W. N"20"	6/19/2000	2	wet		
138-02.1	W. N"20"	7/17/2000	28	wet		
138-02.1	W. N"20"	8/15/2000	22	wet		
138-02.1	W. N"20"	4/3/2001	50	wet	17* (18%)	50
138-02.1	W. N"20"	6/5/2001	2	dry		
138-02.1	W. N"20"	6/18/2001	51	wet		
138-02.1	W. N"20"	8/13/2001	51	wet		
138-02.1	W. N"20"	9/17/2001	6	dry		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 4: LIS WB Midshore – Lordship (CT-W3_001) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-02.1	W. N"20"	5/20/2002	22	wet	5	NA
138-02.1	W. N"20"	6/10/2002	2	dry		
138-02.1	W. N"20"	6/18/2002	11	dry		
138-02.1	W. N"20"	10/1/2002	2	dry		
138-02.1	W. N"20"	10/28/2002	4	wet		
138-02.1	W. N"20"	4/28/2003	2	wet	12	40
138-02.1	W. N"20"	6/9/2003	50	wet		
138-02.1	W. N"20"	6/17/2003	51	dry		
138-02.1	W. N"20"	8/5/2003	8	wet		
138-02.1	W. N"20"	8/11/2003	51	wet		
138-02.1	W. N"20"	8/20/2003	2	dry		
138-02.1	W. N"20"	4/27/2004	2	wet	8	NA
138-02.1	W. N"20"	7/15/2004	6	wet		
138-02.1	W. N"20"	8/6/2004	22	wet		
138-02.1	W. N"20"	9/21/2004	22	wet		
138-02.1	W. N"20"	3/30/2005	43	wet	4	23
138-02.1	W. N"20"	4/5/2005	1	wet		
138-02.1	W. N"20"	5/31/2005	1	wet		
138-02.1	W. N"20"	1/4/2006	6	wet	4	7
138-02.1	W. N"20"	1/24/2006	1	wet		
138-02.1	W. N"20"	4/6/2006	4	wet		
138-02.1	W. N"20"	6/8/2006	2	wet		
138-02.1	W. N"20"	7/31/2006	1	wet		
138-02.1	W. N"20"	12/27/2006	81	dry		
138-02.1	W. N"20"	6/6/2007	5	wet	5	NA
138-02.1	W. N"20"	7/24/2007	1	wet		
138-02.1	W. N"20"	9/12/2007	26	wet		
138-02.1	W. N"20"	10/29/2007	18	wet		
138-02.1	W. N"20"	12/5/2007	1	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 4: LIS WB Midshore – Lordship (CT-W3_001) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-02.1	W. N"20"	2/4/2008	4	dry	5	N/A
138-02.1	W. N"20"	4/30/2008	8	wet		
138-02.1	W. N"20"	6/10/2008	21	wet		
138-02.1	W. N"20"	7/29/2008	6	wet		
138-02.1	W. N"20"	8/12/2008	1	dry		
138-02.1	W. N"20"	4/1/2009	1	dry	5	N/A
138-02.1	W. N"20"	6/10/2009	11	wet		
138-02.1	W. N"20"	7/28/2009	20	dry		
138-02.1	W. N"20"	8/4/2009	4	dry		
138-02.1	W. N"20"	9/2/2009	3	dry		
138-02.1	W. N"20"	4/27/2010	2	wet	5	10
138-02.1	W. N"20"	6/9/2010	1	dry		
138-02.1	W. N"20"	7/15/2010	64	wet		
138-02.1	W. N"20"	10/19/2010	1	dry		
138-02.1	W. N"20"	11/18/2010	18	wet		
138-02.1	W. N"20"	3/14/2011	1	dry	3	N/A
138-02.1	W. N"20"	6/27/2011	9	dry		
138-03.0	E. N"20"	4/24/2000	51	wet	N/A	90
138-04.0	E. R"18"	4/24/2000	51	wet	N/A	90

Shaded cells indicate an exceedance of water quality criteria

† Average of two duplicate samples

** Weather conditions for selected data taken from Hartford because local station had missing data

*Indicates geometric mean and 90% less than values used to calculate the percent reduction

Wet and dry weather fecal coliform (colonies/100 mL) geometric mean values for all monitoring stations on Segment 4: LIS WB Midshore – Lordship (CT-W3_001)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
138-02.0	R"18"	2000-2011	42	21	3	5	2
138-02.1	W. N"20"	2000-2011	38	19	6	8	4
138-03.0	E. N"20"	2000-2011	1	0	NA	NA	NA
138-04.0	E. R"18"	2000-2011	1	0	NA	NA	NA

Shaded cells indicate an exceedance of water quality criteria

Table 18: Segment 5: LIS WB Midshore – Bridgeport Harbor (East) Bacteria Data**Waterbody ID:** CT-W3_002

Characteristics: Saltwater, Class SA, Shellfishing Harvesting for Direct Human Consumption, Recreation, Habitat for Marine Fish and other Aquatic Life and Wildlife, Industrial Water Supply, and Navigation

Impairment: Shellfish Harvesting (*fecal coliform bacteria*)

Water Quality Criteria for fecal coliform:

Geometric Mean: 14 colonies/100 mL
 90% of samples less than: 31 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **56%**
 90% of samples less than: **65%**

Data: 2000 - 2011 from CT DEEP targeted sampling efforts, 2012 TMDL Cycle

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-05.0	SE station 3.1	5/20/2002	2	wet	2	N/A
015-05.0	SE station 3.1	6/10/2002	2	dry		
015-05.0	SE station 3.1	6/18/2002	2	dry		
015-05.0	SE station 3.1	10/1/2002	2	dry		
015-05.0	SE station 3.1	10/28/2002	2	wet		
015-05.0	SE station 3.1	4/28/2003	2	wet	10	19
015-05.0	SE station 3.1	6/9/2003	8	wet		
015-05.0	SE station 3.1	6/17/2003	14	dry		
015-05.0	SE station 3.1	8/5/2003	50	wet		
015-05.0	SE station 3.1	8/11/2003	18	wet		
015-05.0	SE station 3.1	8/20/2003	2	dry		
015-05.0	SE station 3.1	9/30/2003	51	wet		
015-05.0	SE station 3.1	4/27/2004	2	wet	7	15
015-05.0	SE station 3.1	7/15/2004	2	wet		
015-05.0	SE station 3.1	8/6/2004	28	wet		
015-05.0	SE station 3.1	9/21/2004	36	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-05.0	SE station 3.1	3/30/2005	9	wet	3	N/A
015-05.0	SE station 3.1	4/5/2005	1	wet		
015-05.0	SE station 3.1	7/19/2005	1	wet		
015-05.0	SE station 3.1	12/28/2005	6	wet		
015-05.0	SE station 3.1	1/4/2006	32	wet	7	40
015-05.0	SE station 3.1	1/24/2006	2	wet		
015-05.0	SE station 3.1	6/8/2006	34	wet		
015-05.0	SE station 3.1	8/1/2006	1	dry		
015-05.0	SE station 3.1	5/17/2007	6	wet	2	N/A
015-05.0	SE station 3.1	8/23/2007	1	wet		
015-05.0	SE station 3.1	9/13/2007	1	wet		
015-05.0	SE station 3.1	10/29/2007	1	wet		
015-05.0	SE station 3.1	12/5/2007	2	wet		
015-05.0	SE station 3.1	2/4/2008	24	dry	8	N/A
015-05.0	SE station 3.1	4/30/2008	8	wet		
015-05.0	SE station 3.1	6/10/2008	1	wet		
015-05.0	SE station 3.1	7/29/2008	12	wet		
015-05.0	SE station 3.1	12/15/2008	15	wet		
015-05.0	SE station 3.1	4/14/2009	1	dry	2	N/A
015-05.0	SE station 3.1	6/11/2009	3	wet		
015-05.0	SE station 3.1	8/4/2009	1	dry		
015-05.0	SE station 3.1	9/2/2009	4	dry		
015-05.0	SE station 3.1	9/14/2009	4	wet		
015-05.0	SE station 3.1	4/27/2010	1	wet	3	N/A
015-05.0	SE station 3.1	5/5/2010	1	wet		
015-05.0	SE station 3.1	6/9/2010	1	dry		
015-05.0	SE station 3.1	7/15/2010	12	wet		
015-05.0	SE station 3.1	10/19/2010	3	dry		
015-05.0	SE station 3.1	11/18/2010	26	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-01.0	W. R"18"	4/24/2000	4	wet	12	23
138-01.0	W. R"18"	5/16/2000	2	dry		
138-01.0	W. R"18"	6/8/2000	51	wet		
138-01.0	W. R"18"	6/19/2000	11	wet		
138-01.0	W. R"18"	7/17/2000	51	wet		
138-01.0	W. R"18"	8/15/2000	14	wet		
138-01.0	W. R"18"	4/3/2001	4	wet	7	10
138-01.0	W. R"18"	6/5/2001	6	dry		
138-01.0	W. R"18"	6/18/2001	51	wet		
138-01.0	W. R"18"	8/13/2001	2	wet		
138-01.0	W. R"18"	9/17/2001	11	dry		
138-01.0	W. R"18"	5/20/2002	2	wet	2	N/A
138-01.0	W. R"18"	6/10/2002	4	dry		
138-01.0	W. R"18"	6/18/2002	2	dry		
138-01.0	W. R"18"	10/1/2002	2	dry		
138-01.0	W. R"18"	10/28/2002	2	wet		
138-01.0	W. R"18"	4/28/2003	2	wet	4	N/A
138-01.0	W. R"18"	6/9/2003	8	wet		
138-01.0	W. R"18"	8/5/2003	2	wet		
138-01.0	W. R"18"	8/11/2003	22	wet		
138-01.0	W. R"18"	8/20/2003	2	dry		
138-01.0	W. R"18"	4/27/2004	2	wet	5	N/A
138-01.0	W. R"18"	7/15/2004	2	wet		
138-01.0	W. R"18"	8/6/2004	8	wet		
138-01.0	W. R"18"	9/21/2004	22	wet		
138-01.0	W. R"18"	3/30/2005	4	wet	2	N/A
138-01.0	W. R"18"	4/5/2005	1	wet		
138-01.0	W. R"18"	5/31/2005	1	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-01.0	W. R"18"	1/4/2006	10	wet	3	N/A
138-01.0	W. R"18"	1/24/2006	4	wet		
138-01.0	W. R"18"	4/6/2006	1	wet		
138-01.0	W. R"18"	6/8/2006	13	wet		
138-01.0	W. R"18"	7/31/2006	1	wet		
138-01.0	W. R"18"	6/6/2007	7	wet	3	N/A
138-01.0	W. R"18"	7/24/2007	1	wet		
138-01.0	W. R"18"	8/9/2007	2	wet		
138-01.0	W. R"18"	9/12/2007	14	wet		
138-01.0	W. R"18"	10/29/2007	4	wet		
138-01.0	W. R"18"	12/5/2007	1	wet		
138-01.0	W. R"18"	3/13/2008	5	dry	4	7
138-01.0	W. R"18"	6/10/2008	1	wet		
138-01.0	W. R"18"	7/29/2008	8	wet		
138-01.0	W. R"18"	8/12/2008	2	dry		
138-01.0	W. R"18"	9/11/2008	1	wet		
138-01.0	W. R"18"	12/15/2008	46	wet		
138-01.0	W. R"18"	4/1/2009	1	dry	2	N/A
138-01.0	W. R"18"	4/14/2009	1	dry		
138-01.0	W. R"18"	5/12/2009	3	dry		
138-01.0	W. R"18"	6/16/2009	3	dry		
138-01.0	W. R"18"	7/28/2009	6	dry		
138-01.0	W. R"18"	8/4/2009	1	dry		
138-01.0	W. R"18"	9/2/2009	4	dry		
138-01.0	W. R"18"	12/8/2009	1	wet		
138-01.0	W. R"18"	12/15/2009	5	wet		
138-01.0	W. R"18"	12/28/2009	6	wet		
138-01.0	W. R"18"	4/27/2010	1	wet	1	N/A
138-01.0	W. R"18"	6/9/2010	1	dry		
138-01.0	W. R"18"	9/21/2010	1	dry		
138-01.0	W. R"18"	10/19/2010	1	dry		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-01.0	W. R"18"	3/14/2011	34	dry	8	15
138-01.0	W. R"18"	5/25/2011	21	wet		
138-01.0	W. R"18"	6/22/2011	1	wet		
138-01.0	W. R"18"	6/27/2011	7	dry		
138-01.1	S. Long Beach	4/24/2000	8	wet	10	23
138-01.1	S. Long Beach	5/16/2000	2	dry		
138-01.1	S. Long Beach	6/8/2000	36	wet		
138-01.1	S. Long Beach	6/19/2000	2	wet		
138-01.1	S. Long Beach	7/17/2000	51	wet		
138-01.1	S. Long Beach	8/15/2000	28	wet		
138-01.1	S. Long Beach	4/3/2001	2	wet	7	30
138-01.1	S. Long Beach	6/5/2001	2	dry		
138-01.1	S. Long Beach	6/18/2001	51	wet		
138-01.1	S. Long Beach	8/13/2001	51	wet		
138-01.1	S. Long Beach	9/17/2001	2	dry		
138-01.1	S. Long Beach	5/20/2002	6	wet	3	N/A
138-01.1	S. Long Beach	6/10/2002	6	dry		
138-01.1	S. Long Beach	6/18/2002	2	dry		
138-01.1	S. Long Beach	10/1/2002	2	dry		
138-01.1	S. Long Beach	10/28/2002	2	wet		
138-01.1	S. Long Beach	4/28/2003	2	wet	6	7
138-01.1	S. Long Beach	6/9/2003	28	wet		
138-01.1	S. Long Beach	6/17/2003	11	dry		
138-01.1	S. Long Beach	8/5/2003	2	wet		
138-01.1	S. Long Beach	8/11/2003	50	wet		
138-01.1	S. Long Beach	8/20/2003	2	dry		
138-01.1	S. Long Beach	4/27/2004	8	wet	16	15
138-01.1	S. Long Beach	7/15/2004	11	wet		
138-01.1	S. Long Beach	8/6/2004	14	wet		
138-01.1	S. Long Beach	9/21/2004	51	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-01.1	S. Long Beach	3/30/2005	81	wet	4	23
138-01.1	S. Long Beach	4/5/2005	1	wet		
138-01.1	S. Long Beach	5/31/2005	1	wet		
138-01.1	S. Long Beach	1/4/2006	10	wet	4	N/A
138-01.1	S. Long Beach	1/24/2006	1	wet		
138-01.1	S. Long Beach	4/6/2006	8	wet		
138-01.1	S. Long Beach	6/8/2006	5	wet		
138-01.1	S. Long Beach	7/31/2006	3	wet		
138-01.1	S. Long Beach	6/6/2007	14	wet	7	7
138-01.1	S. Long Beach	7/24/2007	1	wet		
138-01.1	S. Long Beach	8/9/2007	3	wet		
138-01.1	S. Long Beach	9/12/2007	44	wet		
138-01.1	S. Long Beach	10/29/2007	8	wet		
138-01.1	S. Long Beach	12/5/2007	6	wet		
138-01.1	S. Long Beach	2/4/2008	8	dry	5	N/A
138-01.1	S. Long Beach	4/30/2008	10	wet		
138-01.1	S. Long Beach	6/10/2008	1	wet		
138-01.1	S. Long Beach	7/29/2008	12	wet		
138-01.1	S. Long Beach	8/12/2008	3	dry		
138-01.1	S. Long Beach	4/1/2009	1	dry	3	N/A
138-01.1	S. Long Beach	4/14/2009	1	dry		
138-01.1	S. Long Beach	6/10/2009	24	wet		
138-01.1	S. Long Beach	7/28/2009	6	dry		
138-01.1	S. Long Beach	8/4/2009	2	dry		
138-01.1	S. Long Beach	9/2/2009	2	dry		
138-01.1	S. Long Beach	4/27/2010	1	wet	4	10
138-01.1	S. Long Beach	6/9/2010	1	dry		
138-01.1	S. Long Beach	7/15/2010	68	wet		
138-01.1	S. Long Beach	10/19/2010	2	dry		
138-01.1	S. Long Beach	11/18/2010	4	wet		
138-01.1	S. Long Beach	3/14/2011	6	dry	5	N/A
138-01.1	S. Long Beach	6/27/2011	4	dry		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-01.2	s. Long Beach	4/24/2000	9	wet	20	40
138-01.2	s. Long Beach	5/16/2000	6	dry		
138-01.2	s. Long Beach	6/8/2000	51	wet		
138-01.2	s. Long Beach	6/19/2000	14	wet		
138-01.2	s. Long Beach	7/17/2000	51	wet		
138-01.2	s. Long Beach	8/15/2000	36	wet		
138-01.2	s. Long Beach	4/3/2001	18	wet	6	10
138-01.2	s. Long Beach	6/5/2001	2	dry		
138-01.2	s. Long Beach	6/18/2001	51	wet		
138-01.2	s. Long Beach	8/13/2001	2	wet		
138-01.2	s. Long Beach	9/17/2001	4	dry		
138-01.2	s. Long Beach	5/20/2002	8	wet	4	NA
138-01.2	s. Long Beach	6/10/2002	2	dry		
138-01.2	s. Long Beach	6/18/2002	22	dry		
138-01.2	s. Long Beach	10/1/2002	2	dry		
138-01.2	s. Long Beach	10/28/2002	2	wet		
138-01.2	s. Long Beach	4/28/2003	2	wet	16	40
138-01.2	s. Long Beach	6/9/2003	50	wet		
138-01.2	s. Long Beach	6/17/2003	14	dry		
138-01.2	s. Long Beach	8/5/2003	51	wet		
138-01.2	s. Long Beach	8/11/2003	51	wet		
138-01.2	s. Long Beach	8/20/2003	6	dry		
138-01.2	s. Long Beach	4/27/2004	50	wet	32* (56%)	65
138-01.2	s. Long Beach	7/15/2004	8	wet		
138-01.2	s. Long Beach	8/6/2004	51	wet		
138-01.2	s. Long Beach	9/21/2004	50	wet		
138-01.2	s. Long Beach	3/30/2005	38	wet	5	23
138-01.2	s. Long Beach	4/5/2005	1	wet		
138-01.2	s. Long Beach	5/31/2005	4	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
138-01.2	s. Long Beach	1/4/2006	9	wet	5	10
138-01.2	s. Long Beach	1/24/2006	1	wet		
138-01.2	s. Long Beach	4/6/2006	5	wet		
138-01.2	s. Long Beach	6/8/2006	45	wet		
138-01.2	s. Long Beach	7/31/2006	2	wet		
138-01.2	s. Long Beach	6/6/2007	3	wet	4	7
138-01.2	s. Long Beach	7/24/2007	1	wet		
138-01.2	s. Long Beach	8/9/2007	1	wet		
138-01.2	s. Long Beach	9/12/2007	81	wet		
138-01.2	s. Long Beach	10/29/2007	20	wet		
138-01.2	s. Long Beach	12/5/2007	1	wet		
138-01.2	s. Long Beach	2/4/2008	10	dry	6	N/A
138-01.2	s. Long Beach	4/30/2008	20	wet		
138-01.2	s. Long Beach	6/10/2008	1	wet		
138-01.2	s. Long Beach	7/29/2008	2	wet		
138-01.2	s. Long Beach	8/12/2008	26	dry		
138-01.2	s. Long Beach	4/1/2009	1	dry	2	N/A
138-01.2	s. Long Beach	4/14/2009	1	dry		
138-01.2	s. Long Beach	6/10/2009	12	wet		
138-01.2	s. Long Beach	7/28/2009	20	dry		
138-01.2	s. Long Beach	8/4/2009	1	dry		
138-01.2	s. Long Beach	9/2/2009	1	dry		
138-01.2	s. Long Beach	4/27/2010	3	wet	5	10
138-01.2	s. Long Beach	6/9/2010	2	dry		
138-01.2	s. Long Beach	7/15/2010	64	wet		
138-01.2	s. Long Beach	10/19/2010	1	dry		
138-01.2	s. Long Beach	11/18/2010	13	wet		
138-01.2	s. Long Beach	3/14/2011	10	dry	7	N/A
138-01.2	s. Long Beach	6/27/2011	5	dry		

Shaded cells indicate an exceedance of water quality criteria

† Average of two duplicate samples

** Weather conditions for selected data taken from Hartford because local station had missing data

*Indicates geometric mean and 90% sample less than used to calculate the percent reduction

Wet and dry weather fecal coliform (colonies/100 mL) geometric mean values for all monitoring stations on Segment 5: LIS WB Midshore – Bridgeport Harbor (East) (CT-W3_002)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
138-01.0	W. R"18"	2000-2011	42	21	4	4	3
138-01.1	S. Long Beach	2000-2011	39	19	5	8	3
138-01.2	s. Long Beach	2000-2011	39	19	7	10	4
015-05.0	SE station 3.1	2002-2011	33	12	4	5	2
Shaded cells indicate an exceedance of water quality criteria							

Table 19: Segment 6: LIS WB Midshore – Bridgeport Harbor (West) Bacteria Data**Waterbody ID:** CT-W3_003

Characteristics: Saltwater, Class SA, Shellfishing Harvesting for Direct Human Consumption, Recreation, Habitat for Marine Fish and other Aquatic Life and Wildlife, Industrial Water Supply, and Navigation

Impairment: Shellfish Harvesting (*fecal coliform bacteria*)

Water Quality Criteria for fecal coliform:

Geometric Mean: 14 colonies/100 mL
 90% of samples less than: 31 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: 30%
 90% of samples less than: 57%

Data: 2000 - 2010 from CT DEEP targeted sampling efforts, 2012 TMDL Cycle

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 6: LIS WB Midshore - Bridgeport Harbor (West) (CT-W3_003) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-02.4	S. Seaside Park near bathhouses	4/24/2000	2	wet	20* (30%)	57
015-02.4	S. Seaside Park near bathhouses	5/16/2000	6	dry		
015-02.4	S. Seaside Park near bathhouses	6/8/2000	50	wet		
015-02.4	S. Seaside Park near bathhouses	6/19/2000	51	wet		
015-02.4	S. Seaside Park near bathhouses	7/17/2000	51	wet		
015-02.4	S. Seaside Park near bathhouses	8/15/2000	50	wet		
015-02.4	S. Seaside Park near bathhouses	4/3/2001	6	wet	14	30
015-02.4	S. Seaside Park near bathhouses	5/30/2001	22	dry		
015-02.4	S. Seaside Park near bathhouses	6/18/2001	51	wet		
015-02.4	S. Seaside Park near bathhouses	8/13/2001	51	wet		
015-02.4	S. Seaside Park near bathhouses	9/17/2001	2	dry		
015-02.4	S. Seaside Park near bathhouses	5/20/2002	8	wet	4	N/A
015-02.4	S. Seaside Park near bathhouses	6/10/2002	6	dry		
015-02.4	S. Seaside Park near bathhouses	6/18/2002	4	dry		
015-02.4	S. Seaside Park near bathhouses	10/1/2002	2	dry		
015-02.4	S. Seaside Park near bathhouses	10/28/2002	4	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 6: LIS WB Midshore - Bridgeport Harbor (West) (CT-W3_003) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-02.4	S. Seaside Park near bathhouses	4/28/2003	2	wet	11	33
015-02.4	S. Seaside Park near bathhouses	6/9/2003	36	wet		
015-02.4	S. Seaside Park near bathhouses	6/17/2003	11	dry		
015-02.4	S. Seaside Park near bathhouses	8/5/2003	50	wet		
015-02.4	S. Seaside Park near bathhouses	8/11/2003	50	wet		
015-02.4	S. Seaside Park near bathhouses	8/20/2003	2	dry		
015-02.4	S. Seaside Park near bathhouses	9/30/2003	8	wet		
015-02.4	S. Seaside Park near bathhouses	4/27/2004	2	wet	14	40
015-02.4	S. Seaside Park near bathhouses	7/15/2004	8	wet		
015-02.4	S. Seaside Park near bathhouses	8/6/2004	50	wet		
015-02.4	S. Seaside Park near bathhouses	9/21/2004	50	wet		
015-02.4	S. Seaside Park near bathhouses	3/30/2005	18	wet	7	15
015-02.4	S. Seaside Park near bathhouses	4/5/2005	1	wet		
015-02.4	S. Seaside Park near bathhouses	7/19/2005	5	wet		
015-02.4	S. Seaside Park near bathhouses	12/28/2005	32	wet		
015-02.4	S. Seaside Park near bathhouses	1/4/2006	50	wet	9	10
015-02.4	S. Seaside Park near bathhouses	1/24/2006	2	wet		
015-02.4	S. Seaside Park near bathhouses	6/8/2006	30	wet		
015-02.4	S. Seaside Park near bathhouses	8/1/2006	2	dry		
015-02.4	S. Seaside Park near bathhouses	10/31/2006	10	dry		
015-02.4	S. Seaside Park near bathhouses	5/17/2007	2	wet	7	10
015-02.4	S. Seaside Park near bathhouses	8/23/2007	3	wet		
015-02.4	S. Seaside Park near bathhouses	9/13/2007	13	wet		
015-02.4	S. Seaside Park near bathhouses	10/29/2007	50	wet		
015-02.4	S. Seaside Park near bathhouses	12/5/2007	5	wet		
015-02.4	S. Seaside Park near bathhouses	2/4/2008	8	dry	12	10
015-02.4	S. Seaside Park near bathhouses	4/30/2008	9	wet		
015-02.4	S. Seaside Park near bathhouses	6/10/2008	2	wet		
015-02.4	S. Seaside Park near bathhouses	7/29/2008	26	wet		
015-02.4	S. Seaside Park near bathhouses	12/15/2008	76	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 6: LIS WB Midshore - Bridgeport Harbor (West) (CT-W3_003) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-02.4	S. Seaside Park near bathhouses	4/14/2009	3	dry	4	N/A
015-02.4	S. Seaside Park near bathhouses	6/11/2009	8	wet		
015-02.4	S. Seaside Park near bathhouses	8/4/2009	8	dry		
015-02.4	S. Seaside Park near bathhouses	9/2/2009	3	dry		
015-02.4	S. Seaside Park near bathhouses	9/14/2009	1	wet		
015-02.4	S. Seaside Park near bathhouses	4/27/2010	47	wet	7	23
015-02.4	S. Seaside Park near bathhouses	5/5/2010	1	wet		
015-02.4	S. Seaside Park near bathhouses	6/9/2010	1	dry		
015-02.4	S. Seaside Park near bathhouses	7/15/2010	91	wet		
015-02.4	S. Seaside Park near bathhouses	10/19/2010	1	dry		
015-02.4	S. Seaside Park near bathhouses	11/18/2010	20	wet		
015-03.0	S. channel to Bridgeport Harbor	4/24/2000	2	wet	12	40
015-03.0	S. channel to Bridgeport Harbor	5/16/2000	2	dry		
015-03.0	S. channel to Bridgeport Harbor	6/8/2000	51	wet		
015-03.0	S. channel to Bridgeport Harbor	6/19/2000	51	wet		
015-03.0	S. channel to Bridgeport Harbor	7/17/2000	51	wet		
015-03.0	S. channel to Bridgeport Harbor	8/15/2000	8	wet		
015-03.0	S. channel to Bridgeport Harbor	4/3/2001	6	wet	9	30
015-03.0	S. channel to Bridgeport Harbor	5/30/2001	4	dry		
015-03.0	S. channel to Bridgeport Harbor	6/18/2001	51	wet		
015-03.0	S. channel to Bridgeport Harbor	8/13/2001	36	wet		
015-03.0	S. channel to Bridgeport Harbor	9/17/2001	2	dry		
015-03.0	S. channel to Bridgeport Harbor	5/20/2002	6	wet	3	N/A
015-03.0	S. channel to Bridgeport Harbor	6/10/2002	2	dry		
015-03.0	S. channel to Bridgeport Harbor	6/18/2002	2	dry		
015-03.0	S. channel to Bridgeport Harbor	10/1/2002	2	dry		
015-03.0	S. channel to Bridgeport Harbor	10/28/2002	14	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 6: LIS WB Midshore - Bridgeport Harbor (West) (CT-W3_003) with annual geometric and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-03.0	S. channel to Bridgeport Harbor	4/28/2003	2	wet	6	N/A
015-03.0	S. channel to Bridgeport Harbor	6/9/2003	6	wet		
015-03.0	S. channel to Bridgeport Harbor	6/17/2003	18	dry		
015-03.0	S. channel to Bridgeport Harbor	8/5/2003	22	wet		
015-03.0	S. channel to Bridgeport Harbor	8/11/2003	18	wet		
015-03.0	S. channel to Bridgeport Harbor	8/20/2003	2	dry		
015-03.0	S. channel to Bridgeport Harbor	9/30/2003	2	wet		
015-03.0	S. channel to Bridgeport Harbor	4/27/2004	2	wet	9	40
015-03.0	S. channel to Bridgeport Harbor	7/15/2004	2	wet		
015-03.0	S. channel to Bridgeport Harbor	8/6/2004	50	wet		
015-03.0	S. channel to Bridgeport Harbor	9/21/2004	51	wet		
015-03.0	S. channel to Bridgeport Harbor	3/30/2005	8	wet	3	N/A
015-03.0	S. channel to Bridgeport Harbor	4/5/2005	1	wet		
015-03.0	S. channel to Bridgeport Harbor	7/19/2005	1	wet		
015-03.0	S. channel to Bridgeport Harbor	12/28/2005	11	wet		
015-03.0	S. channel to Bridgeport Harbor	1/4/2006	26	wet	11	30
015-03.0	S. channel to Bridgeport Harbor	1/24/2006	43	wet		
015-03.0	S. channel to Bridgeport Harbor	6/8/2006	40	wet		
015-03.0	S. channel to Bridgeport Harbor	8/1/2006	1	dry		
015-03.0	S. channel to Bridgeport Harbor	10/31/2006	3	dry		
015-03.0	S. channel to Bridgeport Harbor	5/17/2007	8	wet	2	N/A
015-03.0	S. channel to Bridgeport Harbor	8/23/2007	1	wet		
015-03.0	S. channel to Bridgeport Harbor	9/13/2007	1	wet		
015-03.0	S. channel to Bridgeport Harbor	10/29/2007	2	wet		
015-03.0	S. channel to Bridgeport Harbor	12/5/2007	1	wet		
015-03.0	S. channel to Bridgeport Harbor	2/4/2008	30	dry	6	N/A
015-03.0	S. channel to Bridgeport Harbor	4/30/2008	11	wet		
015-03.0	S. channel to Bridgeport Harbor	6/10/2008	2	wet		
015-03.0	S. channel to Bridgeport Harbor	7/29/2008	1	wet		
015-03.0	S. channel to Bridgeport Harbor	12/15/2008	8	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 6: LIS WB Midshore - Bridgeport Harbor (West) (CT-W3_003) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-03.0	S. channel to Bridgeport Harbor	4/14/2009	1	dry	2	N/A
015-03.0	S. channel to Bridgeport Harbor	6/11/2009	3	wet		
015-03.0	S. channel to Bridgeport Harbor	8/4/2009	2	dry		
015-03.0	S. channel to Bridgeport Harbor	9/2/2009	3	dry		
015-03.0	S. channel to Bridgeport Harbor	9/14/2009	4	wet		
015-03.0	S. channel to Bridgeport Harbor	4/27/2010	1	wet	1	N/A
015-03.0	S. channel to Bridgeport Harbor	5/5/2010	1	wet		
015-03.0	S. channel to Bridgeport Harbor	6/9/2010	1	dry		
015-03.0	S. channel to Bridgeport Harbor	7/15/2010	1	wet		
015-03.0	S. channel to Bridgeport Harbor	10/19/2010	1	dry		
015-03.0	S. channel to Bridgeport Harbor	11/18/2010	5	wet		
015-03.1	R"2"/C"3" channel	4/24/2000	2	wet	12	7
015-03.1	R"2"/C"3" channel	5/16/2000	4	dry		
015-03.1	R"2"/C"3" channel	6/8/2000	51	wet		
015-03.1	R"2"/C"3" channel	6/19/2000	28	wet		
015-03.1	R"2"/C"3" channel	7/17/2000	14	wet		
015-03.1	R"2"/C"3" channel	8/15/2000	28	wet		
015-03.1	R"2"/C"3" channel	4/3/2001	2	wet	7	10
015-03.1	R"2"/C"3" channel	5/30/2001	8	dry		
015-03.1	R"2"/C"3" channel	6/18/2001	51	wet		
015-03.1	R"2"/C"3" channel	8/13/2001	11	wet		
015-03.1	R"2"/C"3" channel	9/17/2001	2	dry		
015-03.1	R"2"/C"3" channel	5/20/2002	2	wet	3	N/A
015-03.1	R"2"/C"3" channel	6/10/2002	2	dry		
015-03.1	R"2"/C"3" channel	6/18/2002	14	dry		
015-03.1	R"2"/C"3" channel	10/1/2002	2	dry		
015-03.1	R"2"/C"3" channel	10/28/2002	6	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 6: LIS WB Midshore - Bridgeport Harbor (West) (CT-W3_003) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-03.1	R"2"/C"3" channel	4/28/2003	2	wet	6	N/A
015-03.1	R"2"/C"3" channel	6/9/2003	18	wet		
015-03.1	R"2"/C"3" channel	6/17/2003	11	dry		
015-03.1	R"2"/C"3" channel	8/5/2003	2	wet		
015-03.1	R"2"/C"3" channel	8/11/2003	22	wet		
015-03.1	R"2"/C"3" channel	8/20/2003	2	dry		
015-03.1	R"2"/C"3" channel	9/30/2003	14	wet		
015-03.1	R"2"/C"3" channel	4/27/2004	2	wet	9	40
015-03.1	R"2"/C"3" channel	7/15/2004	2	wet		
015-03.1	R"2"/C"3" channel	8/6/2004	50	wet		
015-03.1	R"2"/C"3" channel	9/21/2004	51	wet		
015-03.1	R"2"/C"3" channel	3/30/2005	4	wet	2	N/A
015-03.1	R"2"/C"3" channel	4/5/2005	1	wet		
015-03.1	R"2"/C"3" channel	7/19/2005	3	wet		
015-03.1	R"2"/C"3" channel	12/28/2005	3	wet		
015-03.1	R"2"/C"3" channel	1/4/2006	26	wet	4	10
015-03.1	R"2"/C"3" channel	1/24/2006	2	wet		
015-03.1	R"2"/C"3" channel	6/8/2006	35	wet		
015-03.1	R"2"/C"3" channel	8/1/2006	1	dry		
015-03.1	R"2"/C"3" channel	10/31/2006	1	dry		
015-03.1	R"2"/C"3" channel	5/17/2007	1	wet	2	N/A
015-03.1	R"2"/C"3" channel	8/23/2007	1	wet		
015-03.1	R"2"/C"3" channel	9/13/2007	1	wet		
015-03.1	R"2"/C"3" channel	10/29/2007	16	wet		
015-03.1	R"2"/C"3" channel	12/5/2007	2	wet		
015-03.1	R"2"/C"3" channel	2/4/2008	5	dry	4	N/A
015-03.1	R"2"/C"3" channel	4/30/2008	6	wet		
015-03.1	R"2"/C"3" channel	6/10/2008	1	wet		
015-03.1	R"2"/C"3" channel	7/29/2008	2	wet		
015-03.1	R"2"/C"3" channel	12/15/2008	11	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 6: LIS WB Midshore - Bridgeport Harbor (West) (CT-W3_003) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-03.1	R"2"/C"3" channel	4/14/2009	1	dry	2	N/A
015-03.1	R"2"/C"3" channel	6/11/2009	3	wet		
015-03.1	R"2"/C"3" channel	8/4/2009	4	dry		
015-03.1	R"2"/C"3" channel	9/2/2009	1	dry		
015-03.1	R"2"/C"3" channel	9/14/2009	5	wet		
015-03.1	R"2"/C"3" channel	5/5/2010	1	wet	1	3N/A
015-03.1	R"2"/C"3" channel	6/9/2010	1	dry		
015-03.1	R"2"/C"3" channel	7/15/2010	1	wet		
015-03.1	R"2"/C"3" channel	10/19/2010	1	dry		
015-03.1	R"2"/C"3" channel	11/18/2010	5	wet		
Shaded cells indicate an exceedance of water quality criteria						
†Average of two duplicate samples						
** Weather conditions for selected data taken from Hartford because local station had missing data						
*Indicates geometric mean and 90% less than used to calculate the percent reduction						

Wet and dry weather fecal coliform (colonies/100 mL) geometric mean values for all monitoring stations on Segment 6: LIS WB Midshore – Bridgeport Harbor (West) (CT-W3_003)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
015-02.4	S. Seaside Park near bathhouses	2000-2010	41	16	9	12	4
015-03.0	S. channel to Bridgeport Harbor	2000-2010	41	16	5	6	2
015-03.1	R"2"/C"3" channel	2000-2010	40	16	4	5	2
Shaded cells indicate an exceedance of water quality criteria							

Table 20: Segment 7: LIS WB Midshore – Shoal Point Bacteria Data**Waterbody ID:** CT-W3_004

Characteristics: Saltwater, Class SA, Shellfishing Harvesting for Direct Human Consumption, Recreation, Habitat for Marine Fish and other Aquatic Life and Wildlife, Industrial Water Supply, and Navigation

Impairment: Shellfish Harvesting (*fecal coliform bacteria*)

Water Quality Criteria for fecal coliform:

Geometric Mean: 14 colonies/100 mL
 90% of samples less than: 31 colonies/100 mL

Percent Reduction to meet TMDL:

Geometric Mean: **60%**
 90% of samples less than: **50%**

Data: 2000 - 2011 from CT DEEP targeted sampling efforts, 2012 TMDL Cycle

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
015-01.0	SW Penfield Reef	4/24/2000	4	wet	12	30
015-01.0	SW Penfield Reef	5/16/2000	2	dry		
015-01.0	SW Penfield Reef	6/8/2000	14	wet		
015-01.0	SW Penfield Reef	7/17/2000	51	wet		
015-01.0	SW Penfield Reef	8/15/2000	50	wet		
015-01.0	SW Penfield Reef	4/3/2001	2	wet	5	10
015-01.0	SW Penfield Reef	5/30/2001	2	dry		
015-01.0	SW Penfield Reef	6/18/2001	50	wet		
015-01.0	SW Penfield Reef	8/13/2001	8	wet		
015-01.0	SW Penfield Reef	9/17/2001	2	dry		
015-01.0	SW Penfield Reef	5/20/2002	11	wet	5	N/A
015-01.0	SW Penfield Reef	6/10/2002	14	dry		
015-01.0	SW Penfield Reef	6/18/2002	2	dry		
015-01.0	SW Penfield Reef	10/1/2002	2	dry		
015-01.0	SW Penfield Reef	10/28/2002	8	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
015-01.0	SW Penfield Reef	4/28/2003	2	wet	8	19
015-01.0	SW Penfield Reef	6/9/2003	51	wet		
015-01.0	SW Penfield Reef	6/17/2003	4	dry		
015-01.0	SW Penfield Reef	8/5/2003	36	wet		
015-01.0	SW Penfield Reef	8/11/2003	11	wet		
015-01.0	SW Penfield Reef	8/20/2003	2	dry		
015-01.0	SW Penfield Reef	9/30/2003	8	wet		
015-01.0	SW Penfield Reef	4/27/2004	2	wet	4	15
015-01.0	SW Penfield Reef	7/15/2004	2	wet		
015-01.0	SW Penfield Reef	8/6/2004	2	wet		
015-01.0	SW Penfield Reef	9/21/2004	51	wet		
015-01.0	SW Penfield Reef	3/30/2005	18	wet	3	N/A
015-01.0	SW Penfield Reef	4/5/2005	1	wet		
015-01.0	SW Penfield Reef	7/19/2005	1	wet		
015-01.0	SW Penfield Reef	12/28/2005	7	wet		
015-01.0	SW Penfield Reef	1/4/2006	34	wet	8	30
015-01.0	SW Penfield Reef	1/24/2006	4	wet		
015-01.0	SW Penfield Reef	6/8/2006	81	wet		
015-01.0	SW Penfield Reef	8/1/2006	1	dry		
015-01.0	SW Penfield Reef	10/31/2006	3	dry		
015-01.0	SW Penfield Reef	5/17/2007	104	wet	5	10
015-01.0	SW Penfield Reef	8/23/2007	3	wet		
015-01.0	SW Penfield Reef	9/13/2007	10	wet		
015-01.0	SW Penfield Reef	10/29/2007	1	wet		
015-01.0	SW Penfield Reef	12/5/2007	1	wet		
015-01.0	SW Penfield Reef	2/4/2008	3	dry	4	N/A
015-01.0	SW Penfield Reef	4/30/2008	3	wet		
015-01.0	SW Penfield Reef	6/10/2008	1	wet		
015-01.0	SW Penfield Reef	7/29/2008	4	wet		
015-01.0	SW Penfield Reef	12/15/2008	23	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
015-01.0	SW Penfield Reef	4/14/2009	1	dry	2	N/A
015-01.0	SW Penfield Reef	6/11/2009	5	wet		
015-01.0	SW Penfield Reef	8/4/2009	3	dry		
015-01.0	SW Penfield Reef	9/2/2009	5	dry		
015-01.0	SW Penfield Reef	9/14/2009	1	wet		
015-01.0	SW Penfield Reef	4/27/2010	1	wet	2	7
015-01.0	SW Penfield Reef	5/5/2010	1	wet		
015-01.0	SW Penfield Reef	6/9/2010	1	dry		
015-01.0	SW Penfield Reef	7/15/2010	32	wet		
015-01.0	SW Penfield Reef	10/19/2010	1	dry		
015-01.0	SW Penfield Reef	11/18/2010	6	wet		
015-01.1	Penfield Reef	4/24/2000	2	wet	12	40
015-01.1	Penfield Reef	5/16/2000	2	dry		
015-01.1	Penfield Reef	6/8/2000	11	wet		
015-01.1	Penfield Reef	6/19/2000	51	wet		
015-01.1	Penfield Reef	7/17/2000	51	wet		
015-01.1	Penfield Reef	8/15/2000	36	wet		
015-01.1	Penfield Reef	4/3/2001	2	wet	7	10
015-01.1	Penfield Reef	5/30/2001	8	dry		
015-01.1	Penfield Reef	6/18/2001	50	wet		
015-01.1	Penfield Reef	8/13/2001	14	wet		
015-01.1	Penfield Reef	9/17/2001	2	dry		
015-01.1	Penfield Reef	5/20/2002	11	wet	3	N/A
015-01.1	Penfield Reef	6/10/2002	4	dry		
015-01.1	Penfield Reef	6/18/2002	2	dry		
015-01.1	Penfield Reef	10/1/2002	2	dry		
015-01.1	Penfield Reef	10/28/2002	2	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
015-01.1	Penfield Reef	4/28/2003	2	wet	5	4
015-01.1	Penfield Reef	6/9/2003	6	wet		
015-01.1	Penfield Reef	6/17/2003	6	dry		
015-01.1	Penfield Reef	8/5/2003	36	wet		
015-01.1	Penfield Reef	8/11/2003	4	wet		
015-01.1	Penfield Reef	8/20/2003	2	dry		
015-01.1	Penfield Reef	9/30/2003	11	wet		
015-01.1	Penfield Reef	4/27/2004	2	wet	8	15
015-01.1	Penfield Reef	7/15/2004	14	wet		
015-01.1	Penfield Reef	8/6/2004	4	wet		
015-01.1	Penfield Reef	9/21/2004	51	wet		
015-01.1	Penfield Reef	3/30/2005	11	wet	6	N/A
015-01.1	Penfield Reef	4/5/2005	1	wet		
015-01.1	Penfield Reef	7/19/2005	4	wet		
015-01.1	Penfield Reef	12/28/2005	24	wet		
015-01.1	Penfield Reef	1/4/2006	30	wet	5	10
015-01.1	Penfield Reef	1/24/2006	2	wet		
015-01.1	Penfield Reef	6/8/2006	46	wet		
015-01.1	Penfield Reef	8/1/2006	1	dry		
015-01.1	Penfield Reef	10/31/2006	1	dry		
015-01.1	Penfield Reef	5/17/2007	18	wet	4	N/A
015-01.1	Penfield Reef	8/23/2007	2	wet		
015-01.1	Penfield Reef	9/13/2007	12	wet		
015-01.1	Penfield Reef	10/29/2007	1	wet		
015-01.1	Penfield Reef	12/5/2007	2	wet		
015-01.1	Penfield Reef	2/4/2008	9	dry	9	10
015-01.1	Penfield Reef	4/30/2008	6	wet		
015-01.1	Penfield Reef	6/10/2008	1	wet		
015-01.1	Penfield Reef	7/29/2008	18	wet		
015-01.1	Penfield Reef	12/15/2008	57	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
015-01.1	Penfield Reef	4/14/2009	1	dry	2	N/A
015-01.1	Penfield Reef	6/11/2009	8	wet		
015-01.1	Penfield Reef	8/4/2009	4	dry		
015-01.1	Penfield Reef	9/2/2009	3	dry		
015-01.1	Penfield Reef	9/14/2009	1	wet		
015-01.1	Penfield Reef	4/27/2010	3	wet	2	7
015-01.1	Penfield Reef	5/5/2010	1	wet		
015-01.1	Penfield Reef	6/9/2010	1	dry		
015-01.1	Penfield Reef	7/15/2010	72	wet		
015-01.1	Penfield Reef	10/19/2010	1	dry		
015-01.1	Penfield Reef	11/18/2010	1	wet		
015-02.1	Black Rock Harbor mouth "2A"	4/24/2000	2	wet	15	50
015-02.1	Black Rock Harbor mouth "2A"	5/16/2000	4	dry		
015-02.1	Black Rock Harbor mouth "2A"	6/8/2000	51	wet		
015-02.1	Black Rock Harbor mouth "2A"	7/17/2000	51	wet		
015-02.1	Black Rock Harbor mouth "2A"	8/15/2000	51	wet		
015-02.1	Black Rock Harbor mouth "2A"	4/3/2001	2	wet	9	30
015-02.1	Black Rock Harbor mouth "2A"	5/30/2001	36	dry		
015-02.1	Black Rock Harbor mouth "2A"	6/18/2001	51	wet		
015-02.1	Black Rock Harbor mouth "2A"	8/13/2001	14	wet		
015-02.1	Black Rock Harbor mouth "2A"	9/17/2001	2	dry		
015-02.1	Black Rock Harbor mouth "2A"	5/20/2002	2	wet	3	N/A
015-02.1	Black Rock Harbor mouth "2A"	6/10/2002	2	dry		
015-02.1	Black Rock Harbor mouth "2A"	6/18/2002	6	dry		
015-02.1	Black Rock Harbor mouth "2A"	10/1/2002	2	dry		
015-02.1	Black Rock Harbor mouth "2A"	10/28/2002	14	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
015-02.1	Black Rock Harbor mouth "2A"	4/28/2003	2	wet	10	19
015-02.1	Black Rock Harbor mouth "2A"	6/9/2003	36	wet		
015-02.1	Black Rock Harbor mouth "2A"	6/17/2003	18	dry		
015-02.1	Black Rock Harbor mouth "2A"	8/5/2003	51	wet		
015-02.1	Black Rock Harbor mouth "2A"	8/11/2003	28	wet		
015-02.1	Black Rock Harbor mouth "2A"	8/20/2003	2	dry		
015-02.1	Black Rock Harbor mouth "2A"	9/30/2003	4	wet		
015-02.1	Black Rock Harbor mouth "2A"	4/27/2004	51	wet	30	40
015-02.1	Black Rock Harbor mouth "2A"	7/15/2004	14	wet		
015-02.1	Black Rock Harbor mouth "2A"	8/6/2004	51	wet		
015-02.1	Black Rock Harbor mouth "2A"	9/21/2004	22	wet		
015-02.1	Black Rock Harbor mouth "2A"	3/30/2005	11	wet	5	15
015-02.1	Black Rock Harbor mouth "2A"	4/5/2005	1	wet		
015-02.1	Black Rock Harbor mouth "2A"	7/19/2005	1	wet		
015-02.1	Black Rock Harbor mouth "2A"	12/28/2005	46	wet		
015-02.1	Black Rock Harbor mouth "2A"	1/4/2006	30	wet	12	10
015-02.1	Black Rock Harbor mouth "2A"	1/24/2006	9	wet		
015-02.1	Black Rock Harbor mouth "2A"	6/8/2006	81	wet		
015-02.1	Black Rock Harbor mouth "2A"	8/1/2006	1	dry		
015-02.1	Black Rock Harbor mouth "2A"	10/31/2006	10	dry		
015-02.1	Black Rock Harbor mouth "2A"	5/17/2007	171	wet	35* (60%)	30
015-02.1	Black Rock Harbor mouth "2A"	8/23/2007	21	wet		
015-02.1	Black Rock Harbor mouth "2A"	9/13/2007	14	wet		
015-02.1	Black Rock Harbor mouth "2A"	10/29/2007	67	wet		
015-02.1	Black Rock Harbor mouth "2A"	12/5/2007	15	wet		
015-02.1	Black Rock Harbor mouth "2A"	2/4/2008	24	dry	19	30
015-02.1	Black Rock Harbor mouth "2A"	4/30/2008	70	wet		
015-02.1	Black Rock Harbor mouth "2A"	6/10/2008	2	wet		
015-02.1	Black Rock Harbor mouth "2A"	7/29/2008	8	wet		
015-02.1	Black Rock Harbor mouth "2A"	12/15/2008	91	wet		

Single sample fecal coliform data (cols/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore –Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
015-02.1	Black Rock Harbor mouth "2A"	4/14/2009	1	dry	2	N/A
015-02.1	Black Rock Harbor mouth "2A"	6/11/2009	4	wet		
015-02.1	Black Rock Harbor mouth "2A"	8/4/2009	2	dry		
015-02.1	Black Rock Harbor mouth "2A"	9/2/2009	2	dry		
015-02.1	Black Rock Harbor mouth "2A"	9/14/2009	3	wet		
015-02.1	Black Rock Harbor mouth "2A"	4/27/2010	10	wet	7	23
015-02.1	Black Rock Harbor mouth "2A"	5/5/2010	2	wet		
015-02.1	Black Rock Harbor mouth "2A"	6/9/2010	1	dry		
015-02.1	Black Rock Harbor mouth "2A"	7/15/2010	91	wet		
015-02.1	Black Rock Harbor mouth "2A"	10/19/2010	1	dry		
015-02.1	Black Rock Harbor mouth "2A"	11/18/2010	90	wet		
051-05.0	E. R"22" bell	4/24/2000	2	wet	14	19
051-05.0	E. R"22" bell	6/8/2000	28	wet		
051-05.0	E. R"22" bell	7/17/2000	51	wet		
051-05.0	E. R"22" bell	7/18/2000	28	wet		
051-05.0	E. R"22" bell	7/19/2000	2	wet		
051-05.0	E. R"22" bell	8/15/2000	18	wet		
051-05.0	E. R"22" bell	11/13/2000	51	wet		
051-05.0	E. R"22" bell	4/3/2001	2	dry	4	4
051-05.0	E. R"22" bell	5/30/2001	6	dry		
051-05.0	E. R"22" bell	6/18/2001	36	wet		
051-05.0	E. R"22" bell	8/13/2001	6	wet		
051-05.0	E. R"22" bell	8/16/2001	2	dry		
051-05.0	E. R"22" bell	9/17/2001	2	dry		
051-05.0	E. R"22" bell	9/24/2001	2	wet		
051-05.0	E. R"22" bell	5/20/2002	2	wet	3	N/A
051-05.0	E. R"22" bell	6/10/2002	4	wet		
051-05.0	E. R"22" bell	6/17/2002	4	wet		
051-05.0	E. R"22" bell	9/4/2002	11	wet		
051-05.0	E. R"22" bell	9/30/2002	2	wet		
051-05.0	E. R"22" bell	10/1/2002	2	dry		
051-05.0	E. R"22" bell	10/28/2002	2	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
051-05.0	E. R"22" bell	4/29/2003	2	wet	5	1
051-05.0	E. R"22" bell	6/2/2003	8	wet		
051-05.0	E. R"22" bell	6/9/2003	50	wet		
051-05.0	E. R"22" bell	6/17/2003	4	dry		
051-05.0	E. R"22" bell	8/5/2003	14	wet		
051-05.0	E. R"22" bell	8/11/2003	11	wet		
051-05.0	E. R"22" bell	8/20/2003	2	dry		
051-05.0	E. R"22" bell	9/30/2003	4	wet		
051-05.0	E. R"22" bell	10/2/2003	2	dry		
051-05.0	E. R"22" bell	4/27/2004	14	wet	13	15
051-05.0	E. R"22" bell	7/15/2004	11	wet		
051-05.0	E. R"22" bell	8/6/2004	4	wet		
051-05.0	E. R"22" bell	9/21/2004	51	wet		
051-05.0	E. R"22" bell	3/30/2005	14	wet	8	N/A
051-05.0	E. R"22" bell	4/5/2005	1	wet		
051-05.0	E. R"22" bell	8/15/2005	18	wet		
051-05.0	E. R"22" bell	12/28/2005	19	wet		
051-05.0	E. R"22" bell	1/4/2006	90	wet	5	10
051-05.0	E. R"22" bell	7/6/2006	1	wet		
051-05.0	E. R"22" bell	7/10/2006	5	dry		
051-05.0	E. R"22" bell	10/31/2006	2	wet		
051-05.0	E. R"22" bell	11/20/2006	4	dry		
051-05.0	E. R"22" bell	1/3/2007	1	wet	3	3
051-05.0	E. R"22" bell	5/17/2007	36	wet		
051-05.0	E. R"22" bell	5/21/2007	1	dry		
051-05.0	E. R"22" bell	6/19/2007	1	wet		
051-05.0	E. R"22" bell	7/24/2007	4	wet		
051-05.0	E. R"22" bell	8/9/2007	12	wet		
051-05.0	E. R"22" bell	8/23/2007	1	wet		
051-05.0	E. R"22" bell	9/13/2007	1	wet		
051-05.0	E. R"22" bell	10/15/2007	4	dry		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding
051-05.0	E. R"22" bell	3/13/2008	1	dry	3	4
051-05.0	E. R"22" bell	5/22/2008	1	dry		
051-05.0	E. R"22" bell	6/23/2008	1	dry		
051-05.0	E. R"22" bell	7/29/2008	7	dry		
051-05.0	E. R"22" bell	8/12/2008	1	dry		
051-05.0	E. R"22" bell	9/4/2008	1	wet		
051-05.0	E. R"22" bell	9/15/2008	220	wet		
051-05.0	E. R"22" bell	2/2/2009	1	dry	3	N/A
051-05.0	E. R"22" bell	2/9/2009	1	wet		
051-05.0	E. R"22" bell	4/2/2009	1	dry		
051-05.0	E. R"22" bell	4/14/2009	1	wet		
051-05.0	E. R"22" bell	5/12/2009	1	dry		
051-05.0	E. R"22" bell	6/23/2009	14	wet		
051-05.0	E. R"22" bell	6/29/2009	5	wet		
051-05.0	E. R"22" bell	7/27/2009	2	dry		
051-05.0	E. R"22" bell	8/4/2009	1	wet		
051-05.0	E. R"22" bell	8/25/2009	9	dry		
051-05.0	E. R"22" bell	9/2/2009	1	dry		
051-05.0	E. R"22" bell	9/14/2009	3	wet		
051-05.0	E. R"22" bell	10/1/2009	1	dry		
051-05.0	E. R"22" bell	10/8/2009	2	dry		
051-05.0	E. R"22" bell	12/8/2009	1	wet		
051-05.0	E. R"22" bell	12/14/2009	10	dry		
051-05.0	E. R"22" bell	12/28/2009	81	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
051-05.0	E. R"22" bell	4/27/2010	3	wet	2	N/A
051-05.0	E. R"22" bell	6/14/2010	1	dry		
051-05.0	E. R"22" bell	7/15/2010	6	wet		
051-05.0	E. R"22" bell	7/26/2010	1	wet		
051-05.0	E. R"22" bell	8/16/2010	1	wet		
051-05.0	E. R"22" bell	8/18/2010	2	wet		
051-05.0	E. R"22" bell	8/25/2010	1	wet		
051-05.0	E. R"22" bell	9/21/2010	1	dry		
051-05.0	E. R"22" bell	10/6/2010	2	dry		
051-05.0	E. R"22" bell	10/19/2010	1	dry		
051-05.0	E. R"22" bell	11/16/2010	2	wet		
051-05.0	E. R"22" bell	12/15/2010	2	wet		
051-05.0	E. R"22" bell	3/22/2011	2	dry	2	N/A
051-05.0	E. R"22" bell	4/14/2011	8	wet		
051-05.0	E. R"22" bell	5/25/2011	4	wet		
051-05.0	E. R"22" bell	6/15/2011	4	dry		
051-05.0	E. R"22" bell	6/22/2011	1	wet		
051-05.0	E. R"22" bell	6/27/2011	1	wet		
051-05.0	E. R"22" bell	7/20/2011	2	wet		
051-06.0	WPCF outfall pipe end	4/24/2000	6	wet	4	N/A
051-06.0	WPCF outfall pipe end	6/8/2000	2	wet		
051-06.0	WPCF outfall pipe end	7/17/2000	11	wet		
051-06.0	WPCF outfall pipe end	8/15/2000	2	wet		
051-06.0	WPCF outfall pipe end	11/13/2000	4	wet		
051-06.0	WPCF outfall pipe end	4/3/2001	2	dry	2	N/A
051-06.0	WPCF outfall pipe end	5/30/2001	2	dry		
051-06.0	WPCF outfall pipe end	6/18/2001	2	wet		
051-06.0	WPCF outfall pipe end	8/13/2001	4	wet		
051-06.0	WPCF outfall pipe end	8/16/2001	2	dry		
051-06.0	WPCF outfall pipe end	9/17/2001	2	dry		
051-06.0	WPCF outfall pipe end	9/24/2001	6	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
051-06.0	WPCF outfall pipe end	5/20/2002	2	wet	3	N/A
051-06.0	WPCF outfall pipe end	6/10/2002	14	wet		
051-06.0	WPCF outfall pipe end	6/17/2002	2	wet		
051-06.0	WPCF outfall pipe end	7/1/2002	2	dry		
051-06.0	WPCF outfall pipe end	9/4/2002	2	wet		
051-06.0	WPCF outfall pipe end	9/30/2002	8	wet		
051-06.0	WPCF outfall pipe end	10/1/2002	4	dry		
051-06.0	WPCF outfall pipe end	10/28/2002	6	wet		
051-06.0	WPCF outfall pipe end	4/29/2003	4	wet	7	3
051-06.0	WPCF outfall pipe end	6/2/2003	8	wet		
051-06.0	WPCF outfall pipe end	6/9/2003	52	wet		
051-06.0	WPCF outfall pipe end	6/17/2003	4	dry		
051-06.0	WPCF outfall pipe end	8/5/2003	4	wet		
051-06.0	WPCF outfall pipe end	8/11/2003	11	wet		
051-06.0	WPCF outfall pipe end	8/20/2003	2	dry		
051-06.0	WPCF outfall pipe end	9/30/2003	11	wet		
051-06.0	WPCF outfall pipe end	4/27/2004	2	wet	5	15
051-06.0	WPCF outfall pipe end	7/15/2004	2	wet		
051-06.0	WPCF outfall pipe end	8/6/2004	4	wet		
051-06.0	WPCF outfall pipe end	9/21/2004	51	wet		
051-06.0	WPCF outfall pipe end	3/30/2005	45	wet	9	15
051-06.0	WPCF outfall pipe end	4/5/2005	1	wet		
051-06.0	WPCF outfall pipe end	8/15/2005	16	wet		
051-06.0	WPCF outfall pipe end	12/28/2005	8	wet		
051-06.0	WPCF outfall pipe end	1/4/2006	30	wet	8	15
051-06.0	WPCF outfall pipe end	7/6/2006	6	wet		
051-06.0	WPCF outfall pipe end	7/10/2006	1	dry		
051-06.0	WPCF outfall pipe end	10/31/2006	81	wet		
051-06.0	WPCF outfall pipe end	11/20/2006	2	dry		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
051-06.0	WPCF outfall pipe end	1/3/2007	1	wet	4	1
051-06.0	WPCF outfall pipe end	5/17/2007	10	wet		
051-06.0	WPCF outfall pipe end	5/21/2007	1	dry		
051-06.0	WPCF outfall pipe end	6/19/2007	2	wet		
051-06.0	WPCF outfall pipe end	7/24/2007	6	wet		
051-06.0	WPCF outfall pipe end	8/9/2007	34	wet		
051-06.0	WPCF outfall pipe end	8/23/2007	6	wet		
051-06.0	WPCF outfall pipe end	9/13/2007	4	wet		
051-06.0	WPCF outfall pipe end	10/15/2007	4	dry		
051-06.0	WPCF outfall pipe end	2/4/2008	16	wet	10	12
051-06.0	WPCF outfall pipe end	3/13/2008	57	dry		
051-06.0	WPCF outfall pipe end	4/30/2008	3	wet		
051-06.0	WPCF outfall pipe end	5/22/2008	1	dry		
051-06.0	WPCF outfall pipe end	6/23/2008	5	dry		
051-06.0	WPCF outfall pipe end	7/29/2008	6	dry		
051-06.0	WPCF outfall pipe end	8/12/2008	10	dry		
051-06.0	WPCF outfall pipe end	9/4/2008	9	wet		
051-06.0	WPCF outfall pipe end	9/15/2008	180	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/ Dry	Geo Mean	Reduction of Exceeding Samples
051-06.0	WPCF outfall pipe end	2/2/2009	1	dry	2	N/A
051-06.0	WPCF outfall pipe end	2/9/2009	1	wet		
051-06.0	WPCF outfall pipe end	4/2/2009	1	dry		
051-06.0	WPCF outfall pipe end	4/14/2009	1	wet		
051-06.0	WPCF outfall pipe end	5/12/2009	1	dry		
051-06.0	WPCF outfall pipe end	6/23/2009	7	wet		
051-06.0	WPCF outfall pipe end	6/29/2009	1	wet		
051-06.0	WPCF outfall pipe end	7/27/2009	2	dry		
051-06.0	WPCF outfall pipe end	8/4/2009	1	wet		
051-06.0	WPCF outfall pipe end	8/25/2009	9	dry		
051-06.0	WPCF outfall pipe end	9/2/2009	1	dry		
051-06.0	WPCF outfall pipe end	9/14/2009	1	wet		
051-06.0	WPCF outfall pipe end	10/1/2009	1	dry		
051-06.0	WPCF outfall pipe end	12/14/2009	2	dry		
051-06.0	WPCF outfall pipe end	12/28/2009	42	wet		
051-06.0	WPCF outfall pipe end	4/27/2010	5	wet	2	N/A
051-06.0	WPCF outfall pipe end	6/14/2010	1	dry		
051-06.0	WPCF outfall pipe end	7/15/2010	9	wet		
051-06.0	WPCF outfall pipe end	7/26/2010	1	wet		
051-06.0	WPCF outfall pipe end	8/16/2010	1	wet		
051-06.0	WPCF outfall pipe end	8/18/2010	1	wet		
051-06.0	WPCF outfall pipe end	8/25/2010	6	wet		
051-06.0	WPCF outfall pipe end	9/21/2010	4	dry		
051-06.0	WPCF outfall pipe end	10/6/2010	1	dry		
051-06.0	WPCF outfall pipe end	10/19/2010	1	dry		
051-06.0	WPCF outfall pipe end	11/16/2010	1	wet		
051-06.0	WPCF outfall pipe end	11/18/2010	21	wet		
051-06.0	WPCF outfall pipe end	12/15/2010	2	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
051-06.0	WPCF outfall pipe end	4/14/2011	1	wet	3	N/A
051-06.0	WPCF outfall pipe end	5/25/2011	11	wet		
051-06.0	WPCF outfall pipe end	6/15/2011	1	dry		
051-06.0	WPCF outfall pipe end	6/22/2011	5	wet		
051-06.0	WPCF outfall pipe end	6/27/2011	5	wet		
051-06.0	WPCF outfall pipe end	7/20/2011	1	wet		
051-06.1	Jennings Beach	4/24/2000	2	wet	13	50
051-06.1	Jennings Beach	5/16/2000	2	dry		
051-06.1	Jennings Beach	6/8/2000	50	wet		
051-06.1	Jennings Beach	7/17/2000	51	wet		
051-06.1	Jennings Beach	8/15/2000	51	wet		
051-06.1	Jennings Beach	4/3/2001	2	dry	6	7
051-06.1	Jennings Beach	5/30/2001	6	dry		
051-06.1	Jennings Beach	6/18/2001	51	wet		
051-06.1	Jennings Beach	8/13/2001	14	wet		
051-06.1	Jennings Beach	8/16/2001	2	dry		
051-06.1	Jennings Beach	9/17/2001	4	dry		
051-06.1	Jennings Beach	5/20/2002	4	wet	3	N/A
051-06.1	Jennings Beach	6/10/2002	4	wet		
051-06.1	Jennings Beach	6/18/2002	2	dry		
051-06.1	Jennings Beach	10/1/2002	2	dry		
051-06.1	Jennings Beach	10/28/2002	6	wet		
051-06.1	Jennings Beach	4/28/2003	2	wet	16	33
051-06.1	Jennings Beach	6/9/2003	22	wet		
051-06.1	Jennings Beach	6/17/2003	52	dry		
051-06.1	Jennings Beach	8/5/2003	52	wet		
051-06.1	Jennings Beach	8/11/2003	28	wet		
051-06.1	Jennings Beach	8/20/2003	2	dry		
051-06.1	Jennings Beach	9/30/2003	52	wet		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
051-06.1	Jennings Beach	4/27/2004	4	wet	15	40
051-06.1	Jennings Beach	7/15/2004	8	wet		
051-06.1	Jennings Beach	8/6/2004	51	wet		
051-06.1	Jennings Beach	9/21/2004	36	wet		
051-06.1	Jennings Beach	4/5/2005	1	wet	12	23
051-06.1	Jennings Beach	8/15/2005	81	wet		
051-06.1	Jennings Beach	12/28/2005	20	wet		
051-06.1	Jennings Beach	1/4/2006	74	wet	17	40
051-06.1	Jennings Beach	10/31/2006	4	wet		
051-06.1	Jennings Beach	5/17/2007	81	wet	31	30
051-06.1	Jennings Beach	5/21/2007	5	dry		
051-06.1	Jennings Beach	8/9/2007	81	wet		
051-06.1	Jennings Beach	8/23/2007	18	wet		
051-06.1	Jennings Beach	9/13/2007	47	wet		
051-06.1	Jennings Beach	2/4/2008	1	wet	12	23
051-06.1	Jennings Beach	4/30/2008	10	wet		
051-06.1	Jennings Beach	6/23/2008	81	dry		
051-06.1	Jennings Beach	7/29/2008	40	dry		
051-06.1	Jennings Beach	8/12/2008	1	dry		
051-06.1	Jennings Beach	9/4/2008	81	wet		
051-06.1	Jennings Beach	4/14/2009	1	wet	2	N/A
051-06.1	Jennings Beach	7/27/2009	1	dry		
051-06.1	Jennings Beach	8/4/2009	2	wet		
051-06.1	Jennings Beach	8/25/2009	10	dry		
051-06.1	Jennings Beach	9/2/2009	1	dry		
051-06.1	Jennings Beach	9/14/2009	2	wet		
051-06.1	Jennings Beach	10/1/2009	2	dry		

Single sample fecal coliform data (colonies/100 mL) from all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004) with annual geometric means and reduction goals for samples

Station Name	Station Location	Date	Result	Wet/Dry	Geo Mean	Reduction of Exceeding Samples
051-06.1	Jennings Beach	4/27/2010	28	wet	5	N/A
051-06.1	Jennings Beach	8/16/2010	1	wet		
051-06.1	Jennings Beach	8/25/2010	10	wet		
051-06.1	Jennings Beach	10/19/2010	1	dry		
051-06.1	Jennings Beach	11/18/2010	10	wet		
051-06.1	Jennings Beach	12/15/2010	9	wet		
051-06.1	Jennings Beach	4/14/2011	2	wet	2	N/A
051-06.1	Jennings Beach	6/15/2011	3	dry		
051-06.1	Jennings Beach	6/27/2011	2	wet		

Shaded cells indicate an exceedance of water quality criteria

† Average of two duplicate samples

** Weather conditions for selected data taken from Hartford because local station had missing data

*Indicates geometric mean and 90% less than values used to calculate the percent reduction

Wet and dry weather fecal coliform (colonies/100 mL) geometric mean values for all monitoring stations on Segment 7: LIS WB Midshore – Shoal Point (CT-W3_004)

Station Name	Station Location	Years Sampled	Number of Samples		Geometric Mean		
			Wet	Dry	All	Wet	Dry
051-05.0	E. R "22" bell	2000-2011	63	32	4	5	2
051-06.0	WPCF outfall pipe end	2000-2011	63	30	4	5	2
051-06.1	Jennings Beach	2000-2011	40	19	8	11	4
015-01.0	SW Penfield Reef	2000-2010	40	16	5	7	2
015-01.1	Penfield Reef	2000-2010	41	16	5	7	2
015-02.1	Black Rock Harbor mouth "2A"	2000-2010	40	16	10	15	3

Shaded cells indicate an exceedance of water quality criteria

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